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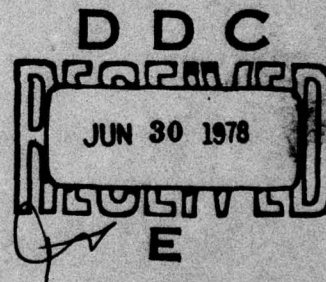
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FACULTY PUBLICATIONS

1977

Volume 18

Books, Texts, Manuals, Chapters,
Papers, Reports, and Presentations

by

Members of the Faculty and Staff of the
United States Air Force Academy

Compiled by the Faculty Secretariat
January 1978

WILLIAM T. WOODYARD, Brigadier General, USAF
Dean of the Faculty

K. L. TALLMAN, Lieutenant General, USAF
Superintendent

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United States Air Force Academy
Colorado 80840

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DEPARTMENT OF AERONAUTICS

PUBLICATIONS

Captain Stephen M. Batill

"FASTOP: A Flutter and Strength Optimization Program for Lifting-Surface Structures"

AIAA Journal of Aircraft, Vol. 14, No. 6, June 1977

Co-authors: Messers. K. Wilkinson, J. Markowitz, E. Lerner and D. George of Grumman Aerospace Corporation

A new computer program entitled FASTOP is described, and results obtained from its application to the structural sizing of three lifting-surface structures for combined strength and flutter-speed requirements are presented. Minimum-weight designs are achieved in only six combined strength and flutter resizing cycles for two metallic structures, one of which includes mass-balance design variables. For a composite wing, FASTOP is used to resize the individual ply thicknesses of a strength-based design for increased flutter speed.

Captain Howard M. Brilliant

"Comparison of Estimated with Measured Maximum Instantaneous Distortion Using Flight Data from an Axisymmetric Mixed Compression Inlet"

AIAA Paper 77-876, July 1977

Co-author: C. A. Bauer, NASA Dryden Flight Research Center

A method of predicting expected maximum instantaneous distortion developed by Melick, Ybarra, and Bencze was applied to flight data for the YF-12C airplane, which has an axisymmetric, mixed compression inlet. Predictions obtained using the method are compared with distortion values calculated from flight measurements. Agreement was good at the test Mach numbers (1.8, 2.1, 2.5, and 3.0). Changing angle of attack or inlet centerbody position did not significantly affect the accuracy of the predicted values.

Presented at the AIAA/SAE 13th Propulsion Conference, 11-13 July 1977.

Captain Kent R. Crenshaw

"Stability and Control Characteristics of the Winglet Configured KC-135A"

MS Thesis, Air Force Institute of Technology, January 1977

Thesis involved the analytical evaluation of the stability and control characteristics of the KC-135A aircraft configured with winglets. Computer models, using the Boeing FLEXSTAB digital computer systems were developed and tested for different flight conditions. Both static and dynamic results with the model in a baseline configuration and in a winglet configuration were obtained. These results included both rigid and elastic aircraft data.

Lieutenant Colonel John M. Fabian

"Analysis of Flows Within Particle Separators"

ASME Paper Number 77-WA/FE-21

Presented at the ASME Winter Annual Meeting, Atlanta, Georgia, November 27 - December 2, 1977

The behavior of small solid particles in various swirling flow fields representative of the flows in particle separators is considered. The physics of the interactions is investigated, and calculational methods developed for describing the particle trajectories. The analysis is applied to a conical separator and to a helicopter engine separator design already in use. The results appear to be in good agreement with the limited data available.

Captain Eric J. Jumper

"The Three-Dimensional Image on Jesus' Burial Cloth"

Proceedings of the 1977 United States Conference of Research on The Shroud of Turin, March 1977

Co-authors: Captain J. P. Jackson, B. Mottern, and Captain K. Stevenson

Describes the relationship of the image intensity on an ancient burial linen purported to be the burial cloth of Jesus of Nazareth. Under the assumption that the cloth actually wrapped a human body,

subjects were enfolded in a full scale model of the Shroud; in this way cloth-body distance could be measured. The distances were point by point correlated with the intensity of the image as recorded on a photographic negative. The results were then used to construct a three-dimensional brightness surface of the body enfolded. Implications to authenticity, archeology, art and Forensic medicine are discussed.

"Considerations of Molecular Diffusion and Radiation as an Image Formation Process on the Shroud"

Proceedings of the 1977 United States Conference of Research on the Shroud of Turin, March 1977

An attempt is made to investigate just how possible the long held belief of the image forming process on the Shroud image could be. Considerations of saturation, surface effects, capillary smearing of the image and characteristic times were investigated. Some observations on radiation as an image forming process were also made.

"Computer Related Investigations of the Holy Shroud"

Proceedings of the 1977 United States Conference of Research on the Shroud of Turin, March 1977

Co-authors: Captain J. P. Jackson and Don Devan

Attempts at enhancing the image found on the Shroud of Turin are discussed. Results of these efforts are presented describing how images brought out by computer enhancement. Possibilities for future research are discussed including a scientific experimental photographic study of the Shroud.

Major Richard C. Oliver

"Investigation of Evaporation from Grooved Inverted Meniscus Heat Pipe Wicks"

Tech Report ME-79(77) KAFB-470-1, Bureau of Engineering Research, University of New Mexico, April 1977

An experimental and analytical study considering a unique heat pipe operating design, correlation of experimental and analytical results. (PhD Dissertation).

Captain Glynn E. Sisson

"Calculation of Aerodynamic Pressure Distributions on Arbitrary Aircraft Geometries Using the Woodward Aerodynamic Analysis Program"

MS Thesis, Air Force Institute of Technology, September 1977

The Woodward Aerodynamic Analysis Program was interfaced with the preliminary aircraft design environment by automating the input preparation process through use of interactive computer graphics. A geometry program was written which allowed vehicle definition in a matter of hours rather than days. In addition, interfaces were written between the program and existing data bases to perform the input preparation process without human intervention in a matter of seconds.

Captain George W. Sparks, Jr.

"Laser Streak Velocimetry for Two-Dimensional Flows in Gases"

AIAA Journal, Vol 15, No. 1, January 1977

Co-author: Dr. Shaoul Ezekiel, Associate Professor, Department of Aeronautics and Astronautics, MIT

A technique was developed that used a high power laser and small particles to measure velocities in air flows. Short exposure streak photographs were made of the particles in a very thin sheet of laser light. Measured velocities compared very favorably with theory in several low speed steady and unsteady flow fields.

"A Laser Doppler Velocimeter for the USAFA Subsonic and Trisonic Wind Tunnels - A Feasibility Study"

Frank J. Seiler Research Laboratory Technical Memo, SRL-TM-2307-77-1, October 1977

Co-author: Capt Michael S. Francis, Chief, Mechanics Division, Frank J. Seiler Research Laboratory, USAFA

A feasibility study of a Laser Doppler Velocimeter (LDV) system for the USAF Academy Subsonic and Trisonic Wind Tunnels was accomplished. A general design was chosen so that the system could be used in widely differing projects in either wind tunnel with a minimum amount of modification. LDV theory, design parameters, tradeoffs, and hazards were discussed.

Lieutenant James C. West, Jr. (USN)

"Digital Programmable Timing Device for Fast Response Instrumentation in Rotating Machines"

MS Thesis, Naval Postgraduate School, January 1977

A peripheral device was designed and constructed that will trigger data acquisition from a stationary sensor at any fixed point in the rotating rotor frame, independent of rotor speed. The device accomplishes this task by dividing the perimeter of the rotor into a finite number of sub-intervals (pulses) between each rotor blade. Because the number of pulses generated is always a constant, the time between pulses are inversely proportional to the rotor RPM. The desired pulse is then selected by the source program and measurements performed at the desired location on the rotor.

Captain John A. Wright

"An Experimental Study of Hydraulic System Frequency Response Characteristics"

MS Thesis, Air Force Institute of Technology, March 1977

An evaluation of the capabilities and limitations of a McDonnell Douglas Frequency Response Prediction Computer Program. Several hydraulic system configurations were tested and the results compared to the computer predicted response. Areas of satisfactory as well as unsatisfactory comparison were discussed.

PRESENTATIONS

Major James D. Lang

"Good, Better and Best Turn Performance"

AF Flight Dynamics Laboratory briefing, 11 March 1977

Possible improvement to airplane maneuver capabilities were postulated by use of a dynamic stall technique. Areas of needed research were discussed and a follow-on effort by DFAN was proposed.

"Dynamic Effects of a Growing Separated Region on an Airfoil"

U.T.S.I. Short Course on Flow Separation, University of Tennessee Space Institute, 19 April 1977

Unusual unsteady flow effects associated with stalling of an airfoil were considered in order to discuss some of the physical phenomena and recent attempts at analytically modelling such flows.

DEPARTMENT OF ASTRONAUTICS AND COMPUTER SCIENCE

PUBLICATIONS

Dr. Charles E. Fosha

"A Digital Line of Sight Estimator Employing the ASCOT Electro-Optical Sensor for Air-to-Air Gunnery Engagements"

USAF-TR-77-11, USAF Academy Technical Report, June 1977

Co-authors: Major Anthony L Leatham and Major Roger P. Neeland, Department of Astronautics and Computer Science, USAF Academy, Colorado

A digital line of sight (LOS) estimator employing the Bendix ASCOT EO tracker as a LOS sensor and employing the ROLM 1664 as the host digital computer is developed for air-to-air gunnery engagements. The digital LOS estimator generates estimates of target velocity and acceleration for use in a director fire control algorithm and for assisting the ASCOT in tracking through clutter. A constant gain LOS estimator is developed and compared with the classical time varying Kalman gain approach. Results show that the constant gain approach performs nearly as well as the time varying gain approach, with considerable reduction in computational complexity.

Captain Ronald P. Fuchs

"A Ground Control Magnetic Momentum Dumping Algorithm for the GPS Spacecraft"

Proceedings of the AIAA Guidance and Control Conference, Hollywood, Florida, August 1977

Co-author: Captain George T. Kroncke, Department of Astronautics and Computer Science, USAF Academy, Colorado

The Global Positioning System requires precise ephemeris data. A primary cause of ephemeris errors is the RCS momentum dumping. This research determined a ground based system to achieve magnetic momentum dumping.

A method of determining the settings for residual field balancing magnets has been devised. Constraints are:

- a. Only two magnets are available;
- b. Switches occur within sight of a ground station;
- c. Commands cannot be stored on the spacecraft.

The method developed requires changes in the magnets either three or four times in a day occurring at 0° , 90° , 180° , 360° in argument of latitude. Results indicate that the expected momentum buildup can always be dumped magnetically.

Captain Paul A. Karger

"Non-Discretionary Access Control for Decentralized Computing Systems"

SM Thesis, Massachusetts Institute of Technology, May 1977
MIT/LCS/TR-179 and ESD-TR-77-142

This thesis examines the issues relating to non-discretionary access controls for decentralized computing systems. Decentralization changes the basic character of a computing system from a set of processes referencing a data base to a set of processes sending and receiving messages. Because messages must be acknowledged, operations that were read-only in a centralized system become read-write operations. As a result, the lattice model of non-discretionary access control, which mediates operations based on read versus read-write considerations, does not allow direct transfer of algorithm from centralized systems. This thesis develops new mechanisms that comply with the lattice model and provide the necessary functions for effective decentralized computation.

Major Leonard R. Kruczynski

"Aircraft Navigation with the Limited Operational Phase of the NAVSTAR Global Positioning System"

Proceedings of the ION National Aerospace Meeting, Denver, Colorado
April 1977

In 1980, the NAVSTAR Global Positioning System (GPS) will be in the limited operational phase. During this phase, a GPS user will not generally be able to determine his position using satellite measurements only. This paper describes the simulation of an aircraft navigation technique which uses the limited operational phase GPS and barometric altimeter measurements.

The tested navigation algorithm is based on the well-known Kalman filter equations. Three different models of aircraft acceleration were evaluated. Results indicate that, for a wide range of filter parameters, navigation errors are generally less than 100 meters. Poor geometry, however, results in kilometer-sized position errors.

Lieutenant Colonel Donald G. Pursley

"The Data Base Administrator: A Contingency Approach"

CINCOM's Knock-About/77 Proceedings, October 1977

The duties of the Data Base Administrator (DBA) are well established in the literature. However, very little has been done to provide management with the guidance needed to organize for the DBA concept. This article suggests that a contingency approach to the DBA function is the only way that this important concept will be recognized as being viable and not just another data processing myth. Contingency management is defined as the establishment of the relationships between environmental variables and managerial concepts and techniques. Several examples of contingency models are discussed. The duties of the DBA are explained and used to show that in some environments the DBA tasks can be accomplished by one individual as a part-time duty while in other environments a full-time staff is required.

PRESENTATIONS

None

DEPARTMENT OF BEHAVIORAL SCIENCES AND LEADERSHIP

PUBLICATIONS

Dr. Lois B. DeFleur

"Cadet Attitudes During the Admission of Women to the USAF Academy"

Presented at the American Psychological Association Meeting,
August 1977

This paper identified the initial attitudes of male and female cadets at the USAF Academy towards women in non-traditional roles, women at the Academy and women in military combat and leadership positions.

"Beginning Months of Coeducation at the USAF Academy"

Presented at the American Sociological Association Meeting,
September 1977

This paper compares male and female cadets at the USAF Academy in terms of selected scholastic, athletic and leadership characteristics. The relationship between attitudes towards women in non-tradition roles and membership in integrated and segregated squadrons was also measured, as well as their impact on male-female interaction patterns.

"The Development of Military Professionalism Among Male and Female Air Force Academy Cadets"

Presented at the Inter-University Seminar on Armed Forces and Society, October 1977

This paper showed the demographic background, perceived leadership abilities and prior leadership experience of male and female Air Force Academy cadets. The relationship between leadership traits and experience, and military performance were also discussed.

Captain David C. Gillman

"Cadet Attitudes During the Admission of Women to the USAF Academy"

Presented at the American Psychological Association Meeting,
August 1977

(See Dr. Lois B. DeFleur)

"Beginning Months of Coeducation at the USAF Academy"

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Captain William Marshak

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"The Development of Military Professionalism Among Male and Female
Air Force Academy Cadets"

Presented at the Inter-University Seminar on Armed Forces and
Society, October 1977

(See Dr. Lois B. DeFleur)

Lieutenant Colonel William E. Rosenbach

"Job Enrichment and Job Enlargement: What are the Facts About Work
Redesign"

Colorado Business Review, Vol 1, No. 9, 1977

Co-authors: Robert A. Zawacki, School of Business, University of
Colorado at Colorado Springs, Colorado Springs, Colorado; Cyril P.
Morgan, Department of Management and Organization, University of
Colorado, Boulder, Colorado

Work redesign is presented on a strategy for organizational change
that will lead to the improvement of the quality of working life.
It is not presented on a panacea for all organizational problems.
The importance of proper diagnostic procedures and the recognition
of individual differences is also stressed.

"Research Round-Up"

The Personnel Administrator, Vol 22, No. 8, 1977

Co-authors: Robert A. Zawacki, School of Business, University of Colorado at Colorado Springs, Colorado Springs, Colorado; Cyril P. Morgan, Department of Management and Organization, University of Colorado, Boulder, Colorado

A critical review of the work redesign literature is presented with emphasis on the inadequate research that is characteristic of this topic. The need for more rigorous research into work redesign and its outcome is stated. The importance of the diagnostic phases of any work redesign project is also presented.

Captain B. Don Sullivan (USA)

"Tooth-to-Tail: A Backache"

The Army Logistician, 1977, 9, (5), 29-30

The Army policy of reducing combat service support units to minimum manning (commonly called the Tooth-to-Tail concept) is viewed as having serious adverse effects on the logistics posture of combat divisions. Specific instances are cited where inadequate equipment and personnel are authorized in the division Supply and Services Company to perform required missions. An appeal is made to restore equipment and personnel and to more carefully evaluate contemplated reductions in the future.

PRESENTATIONS

Major Gene A. Berry

"Auditory-Visual Concept Identification"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

The purpose of this study were to compare the concept identification performance for combinations of single and multiple, auditory and visual relevant cues. Subjects were 96 male college undergraduates who participated in one of eight cue-combination groups. Concept cues were presented as auditory-visual arrays of alphabetic consonants, with five comparable binary dimensions in each modality. Performance was compared on two variables, total errors to criterion and trial of last error.

Lieutenant Colonel L. Ralph Chason

"Student Attrition at the United States Air Force Academy"

Co-author: Lieutenant Colonel Lawrence F. Sharp, Department of Behavioral Sciences and Leadership, United States Air Force Academy, CO

Presented to the 85th Annual Convention of the American Psychological Association, San Francisco, CA, August 1977

Examines student attrition as a function of general adjustment to stress as identified by the Minnesota Multiphasic Personality Inventory. In general, it was shown that those individuals whose MMPI scales indicated a high probability of adjustment difficulty tended to attrit earliest.

"The Importance of Psychological Factors in Early Attrition from the United States Air Force Academy"

Co-authors: Lieutenant Colonel Lawrence F. Sharp and Major Valentin W. Tirman, Department of Behavioral Sciences and Leadership, U.S. Air Force Academy, CO

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

Two samples of Air Force Academy cadets (Sample I - N=1382; Sample II - N=1470) were used to test various hypotheses dealing with the use of Minnesota Multiphasic Personality Inventory (MMPI) scale scores as direct predictors of student attrition from the Air Force Academy. It was hypothesized that addition of scale scores to existing aptitude and achievement based prediction equations would significantly improve attrition prediction. A five category attrition criterion was predicted.

Lieutenant Colonel Eugene H. Galluscio

"Monocular Helmet Displays as an Alternate Source of Flight Information"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

The potential use of Helmet Mounted Displays (HMD) as an alternate source of flight information was examined. Air Force T-41 instructor pilots were trained to perform two complex flight maneuvers in a GAT 1 flight simulator using a monocular visor-projected display as the sole source of aircraft flight information.

"The Effect of Combat Oriented Training on the Perception of Femininity in Women Cadets"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

The "Male and Female Attitudes Toward Basic Cadet Training" questionnaire was given to 46 women and 243 men cadets from the Class of 1980. Both groups indicated that the combat oriented training was necessary and functional and increased their confidence in their physical and psychological stamina. In general, the male cadets tended to disagree with the notion that exposure to combat training defeminized the women, while the women cadets very strongly disagreed with the idea that they were defeminized at all by this rigorous training.

Captain David C. Gillman

"Patterns of Accommodation for Female Cadets at the USAF Academy"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

The history of American minorities, in their relationship with the majority, has shown various patterns of accommodation, including aggression, exclusion and avoidance, assimilation, and pluralism. Recently women have been pressing for and gaining entrance into traditionally male occupational roles. A question arises concerning what pattern or patterns of accommodation will be utilized with women accepting these roles. The admission of women to the USAF Academy should provide a useful case study in addressing this question.

Captain Richard L. Hughes

"Sex Bias in the Evaluation of Job Performance"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

This study investigated sexual bias in the evaluation of job performance. 204 cadets at the Air Force Academy read an evaluation of a fictitious officer's performance of duty. The report described such things as the officer's responsibilities, quality of work, initiative, and judgement. After reading the evaluation Ss rated the officer's command potential; they assigned a percentile score indicating the officer's standing relative to peers; and they recommended for or against promotion. Personal pronouns in the reports were systematically varied so that half of the time the evaluated officer was female and half of the time male.

Major James E. Klusman

"A Study of Secondary Reinforcement Theory"

Co-authors: Jon T. Reilman and Steven A. Simon, U.S. Air Force Academy, CO

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

Two experiments were designed which provided differential predictions of experimental outcomes by the traditional view of secondary reinforcement and Longstreth's cognitive view of secondary reinforcement. In the first experiment, a control group of kindergarten children played a two-choice discrimination game in which they could win candy for a correct response. The second experiment was a replication of the original design, utilizing first-grade children.

Captain Ronald LaScala

"New Concepts in Military Counseling"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

A study of a newcomers counseling program was conducted over a two-year period at a selected Air Force installation. The program consisted of first conducting an orientation program designed to promote a positive attitude toward counseling. The second portion of the program used a questionnaire designed to allow participants to relay their problems to a counseling staff. Those participants who indicated problems were scheduled for counseling assistance. Control groups were developed to compare differences on measures of adjustment difficulties. Experimental groups experienced 75% fewer drug and alcohol problems than control groups.

"Increasing Airmen Effectiveness in the Military Environment"

Presented at the 85th Annual Convention of the American Psychological Association, San Francisco, CA, August 1977

Discussed the effectiveness of a newcomers orientation counseling program which was designed for the military environments. The concept of early identification of problems and early assistance provided the basis of a program for first term airmen immediately after their arrival on base. The results of an experimental analysis of the program indicated that experimental groups who received counseling experienced 74% fewer military offenses which were defined as Article 15, AWOL or Court Martial Action.

Captain Blaine N. Lee

"Fostering Institutional Creativity--When, Why Not, and Caveat or Peter's Principle Impugned"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

Dr. Lawrence Peter has made popular the notion that workers in all organizations rise until they achieve a level of stagnating incompetence. Self-conscious supervisors have consequently undertaken self and supervisee analysis to ascertain the levels of constructive productivity that are the hallmarks of a not-yet incompetent worker. One of these hallmarks is creativity, if expressed in bureaucratically accepted ways.

"Improving the Academic Performance of College Students Through Nonprofessional Training in Behavioral Self-Modification"

Co-author: Captain B. Don Sullivan, Department of Behavioral Sciences and Leadership, U.S. Air Force Academy, CO

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

United States Air Force Academy cadets live in an academically intense and highly time constrained environment. In order to maximize study time available and to assist sufficiently motivated students, an Academy-wide "How-To-Study" Program has been developed.

Captain William P. Marshak

"Attitudes Toward Women as a Function of Personality Factors"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

An important factor in the ultimate successful integration of women into a previously all male institution is whether attitudes toward women are an ingrained part of personality or are a more peripheral component, and susceptible to modification. This paper will compare personality to the attitudes held about acceptable women's roles.

Lieutenant Colonel William E. Rosenbach

"Similarities of Men and Women in Perceptions of Their Work and Their Affective Responses: An Empirical Test"

37th Annual Meeting of the Academy of Management, Kissammee, FL,
August 1977

Panel Member - "Job Enrichment in the Military Services"

Interservice Human Resource Development Conference, Maxwell AFB,
AL, October 1977

Lieutenant Colonel Lawrence F. Sharp

"Student Attrition at the United States Air Force Academy"

Co-author: Lieutenant Colonel L. Ralph Chason, Department of Behavioral Sciences and Leadership, U.S. Air Force Academy, CO

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(See Captain Blaine N. Lee)

Major Valentin W. Tirman, Jr.

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Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

(See Lieutenant Colonel L. Ralph Chason)

Captain Donnell M. Washington

"Brain Laterality Effects in Visual Processing"

Presented at the 48th Annual Meeting of the Colorado-Wyoming Academy of Science, USAF Academy, CO, April 1977

The purpose of this experiment was to compare the effect of projecting verbal information unilaterally to each visual field. On each trial one letter was presented to either the right or left visual field. Subjects were required to recognize and categorize each letter as a vowel or consonant. It was assumed that identification and categorization of letters involves sequential analytic processing and that the right visual field-left hemisphere would be more efficient than the left visual field-right hemisphere with respect to sequential analytic processing of verbal information.

DEPARTMENT OF CHEMISTRY AND BIOLOGICAL SCIENCES

PUBLICATIONS

Captain Lawrence J. Biever

"Studies of the Use of Non-Potable Irrigation on the Air Force Academy Golf Course"

The Journal of the Colorado-Wyoming Academy of Science, Fort Collins, Colorado, Vol. IX, No. 1, pg. 36, 1977. (Abstract for Presentation)

(See Captain Randal A. Gaseor)

"Studies of the Use of Non-Potable Irrigation on the Air Force Academy Gold Course"

Technical Memorandum FJSRL-TR-0008

(See Captain Randal A. Gaseor)

Major William J. Cairney

"The Epidemiology of Human Mycotic Diseases" (Book Review)

Mycologia 69(1):214-215. January-February 1977

A review and analysis of a new book by Yousef Al-Doory which represents a collection of the most recent information on fungal diseases in humans and animal populations.

"Development Effects of Hyperbaric Oxygen on Selected Human Pathogenic Fungi in Culture"

Doctoral Dissertation, Cornell University, Ithaca, New York, 1977

The effects of hyperbaric oxygen were investigated on the growth and development of seven human pathogenic fungi, including four dermatophytes, two systemic pathogens, and one mucous membrane pathogen. Results show that all organisms analyzed were inhibited or retarded within human oxygen tolerance limits, suggesting that compression chamber therapy might be of use in treatment of diseases caused by these organisms.

Captain Randal A. Gaseor

"Studies of the Use of Non-Potable Irrigation on the Air Force Academy Golf Course"

The Journal of the Colorado-Wyoming Academy of Science, Fort Collins, Colorado, Vol. IX, No. 1, pg. 36, 1977: (Abstract for presentation)

Co-author: Captain Lawrence J. Biever

The use of non-potable water for turf irrigation was investigated at the USAF Academy. Analysis of selected non-potable irrigation sites revealed elevated levels of copper, zinc, and iron in the soil. The amounts of those minerals decreased with depth. Even though a species change in the grass has occurred, and some adverse effects have been observed in the irrigated Ponderosa pine, no conclusions can be drawn on the long term effects of non-potable irrigation.

"Studies of the Use of Non-potable Irrigation on the Air Force Academy Golf Course"

Technical Memorandum FJSRL-TR-77-0008

Co-author: Captain Lawrence J. Biever

Data gathered over a twelve year soil sampling program is presented and used to evaluate the effects of non-potable irrigation on the USAF Academy Golf Course. Elevated trace metal concentrations were found, and decreased with depth. The study is part of a long term evaluation of the effects of non-potable water use.

Major Chester Dymek

"Chemical Generation of a Population Inversion Between the Spin-Orbit States of Atomic Iodine"

Applied Physics Letters 31 (11), December 1977

Senior author: A. T. Pritt

Major Armand A. Fannin

"The Vapor Pressure of Aluminum Chloride Systems. 1. Vapor Pressure and Triple Point of Pure Aluminum Chloride"

Journal of Chemical and Engineering Data 22:367, 1977

Senior author: J. T. Viola

Lieutenant Colonel Lawrence R. Klinestiver

"A Survey of Lead Levels in Soils and Vegetation of Selected Airfield Environments"

Technical Report - FJSRL-TR-77-0011

(See Major Charles E. Thalken)

Captain Michael J. Moran

"A Survey of Lead Levels in Soils and Vegetation of Selected Airfield Environments"

Technical Report - FJSRL-TR-77-0011

(See Major Charles E. Thalken)

Lieutenant Colonel David W. Seegmiller

"The Vapor Pressure of Aluminum Chloride Systems. 1. Vapor Pressure and Triple Point of Pure Aluminum Chloride"

Journal of Chemical and Engineering Data 22:367, 1977

Senior author: J. T. Viola

Major Charles E. Thalken

"A Survey of Lead Levels in Soils and Vegetation of Selected Airfield Environments"

Technical Report - FJSRL-TR-77-0011

Co-authors: Captain Alvin L. Young, Captain Michael J. Moran, and Lt Col Lawrence R. Klinestiver

Soil and vegetation from a control area and from areas immediately adjacent to the airfields at the USAF Academy and Peterson AFB, CO, were analyzed for elemental lead using a Model 403 Perkin-Elmer Atomic Absorption Spectrophotometer. Mean lead levels in soil of 2.4, 10.2, and 6.2 ppm were found for the three locations, respectively. Mean lead levels in vegetation of 3.4, 25.4, and 40.4 ppm were found for the three locations, respectively. These data suggest the need for studies of indigenous herbivores for possible lead accumulation.

Captain Ronald E. Watras

"Can P-Chem be Learned in the Laboratory"

American Chemical Society, 174th National Meeting, Chicago, Illinois, Abstracts of Papers, CHED #40, 1977

To date, few innovations have been developed in the teaching of physical chemistry. Those developed have been primarily concerned with modifying the scheme of instruction presented in lecture. This paper presents a fresh approach concentrating on the content of instruction. The success of implementing a physical chemistry laboratory course where content is emphasized will be discussed.

Captain Alvin L. Young

"A Survey of Lead Levels in Soils and Vegetation of Selected Airfield Environments"

Technical Report - FJSRL-TR-77-0011

(See Major Charles E. Thalken)

PRESENTATIONS

Major William J. Cairney

"Physics of the Atmosphere"

Second Annual Symposium on High Altitude Running, Rocky Mountain Chapter, American College of Sports Medicine, 13 August 1977

Captain Randal A. Gaseor

"Studies of the Use of Non-Potable Irrigation on the Air Force Academy Golf Course"

Colorado-Wyoming Academy of Science, USAF Academy, Colorado, 23 April 1977

Co-author: Capt Lawrence J. Biever

"Non-Potable Irrigation on the Eisenhower Golf Course"

Rocky Mountain Golf Course Superintendents Association,
Educational Session, USAF Academy, Colorado, 19 July 1977

"Non-Potable Water Reuse"

Colorado State University, Department of Fishery and Wildlife
Biology, Seminar, Fort Collins, Colorado, 8 November 1977

Captain Ronald E. Watras

"Can P-Chem be Learned in the Laboratory"

American Chemical Society, 174th National Meeting, Chicago,
Illinois, 1 September 1977

Captain Donald F. Shepard

"The Thermal Decomposition of TNT by Differential Scanning
Calorimetry"

Seminar presented to the Department of Chemistry, University
of New Mexico, Albuquerque

DEPARTMENT OF CIVIL ENGINEERING, ENGINEERING MECHANICS
AND MATERIALS

PUBLICATIONS

Major George E. Cannon

"Explosive Impulse Welding"

FJSRL-TR-77-0012, July 1977

Co-author: Lt Colonel Douglas H. Merkle, AFWL/TP, Kirtland AFB, NM

Explosive welds were conducted with various combinations of aluminum and steel, varying plate thicknesses, different configurations, several explosives, at various concentrations and atmospheres of various types. Framing camera, flash x-ray, collapsable velocity probes and manganin wire pressure gages were used to record position-time data, velocities and pressures. Welded specimens were tested destructively and nondestructively to measure weld tensile and shear strength metallographic data, and ultrasonic characteristics.

Captain Anthony Eden

"Electricity from the Sun"

Air Force Engineering and Services Quarterly, August 1977

Co-author: Paul F. Neal, Utilities Branch, Engineering Division, Directorate of Engineering Services, Headquarters, U.S. Air Force

The use of photovoltaic cells to provide electricity from sunlight for Air Force uses was discussed. The makeup of the cells and their operation were described. The possibility of application to typical power problems was illustrated to include remote locations and mobile equipment. The economic situation of photovoltaic cells was still vague with immediate future not promising for this source of energy.

"Second Interim Technical Report on USAFA Solar Test House"

CEEDO-TR-77-34, September 1977

Co-author: Captain John T. Tinsley, Department of Civil Engineering, Engineering Mechanics and Materials, USAFA, CO

This report centered on the progress at the Solar Test House since April 1976. Included in the report were the results of the following changes: additional heat exchangers, bleed air lines, storage tank volume reduction, control temperature changes, and the use of energy conservation techniques. Thermography studies conducted during this time were discussed with data correlation to photographic evidence. The data gathered by the microprocessor was analyzed and improvements in system operation recommended.

Captain Ralph R. Gajewski

"The Generalized Ray Theory and Transient Responses of Layered Elastic Solids"

Physical Acoustics, Vol XIII, Academic Press, NY, 1977

Co-author: Yih-Hsing Pao, Chairman, Department of Theoretical and Applied Mechanics, Cornell University

The paper reviews generalized ray theory for two and three dimensional solids composed of horizontal elastic media of different proportions. The method as originally developed for geophysical applications can also be used for analyzing signals in acoustic emissions. The methods of following the ray paths of reflection and refraction as well as numerical methods are discussed. Responses due to a point source in a plate and a two layered solid are presented.

Lieutenant Colonel William M. Henghold

"Free Vibrations of Cable in Three Dimensions"

Journal of the Structural Division, ASCE, Vol 103, No ST5, Proc Paper 12954, May 1977, pp 1127-1136

Co-authors: Major J. J. Russell and Lt Colonel Joseph D. Morgan, III, Department of Civil Engineering, Engineering Mechanics and Materials, USAFA, CO

The result of an extensive analysis of the three dimensional free vibration of a single span cable, using nonlinear finite elements, is presented. The method provides excellent results throughout the spectrum of end conditions and geometric non-linearity. For a homogeneous cable of constant cross-section, the nonlinear equilibrium position and the natural frequencies were shown to depend only on the end conditions and the stiffness

to weight ratios. It has been demonstrated that results of engineering utility can be obtained from plots constructed for a typical stiffness to weight ratio since realistic deviations from this value result in only minor changes in frequency. An empirical formula based on static calculations, which gives a good approximation to the lowest natural frequency, has been presented.

Major John J. Russell

"Equilibrium and Stability of a Whirling Rod-Mass System"

International Journal of Non-linear Mechanics, Vol 12, pp 91-101, Pergamon Press, 1977

Co-author: W. J. Anderson, Department of Aerospace Engineering, The University of Michigan

A two-degree-of-freedom lumped-mass model is used to gain understanding of the equilibrium of a circularly towed cable. Particular cases which are considered are those of no drag, viscous drag, and viscous drag with a crosswind.

"Equilibrium and Stability of a Circularly Towed Cable Subject to Aerodynamic Drag"

Journal of Aircraft, Vol 14, No 7, July 1977, pp 680-686

Co-author: W. J. Anderson, Department of Aerospace Engineering, The University of Michigan

The finite element method is used to study the equilibrium and stability of an elastic cable whose upper end is towed in a horizontal, circular flight path at a constant angular velocity. Fluid drag is assumed to be composed of tangential and normal components which are proportional to the tangential and normal velocity components squared, respectively. The problem includes strong geometric nonlinearities and is nonconservative, thereby admitting multiple solutions which may be stable, statically unstable or dynamically unstable.

"Cable Equilibrium and Stability in a Steady Wind"

Presented and published in the Proceedings of the ASCE Fall Convention and Exhibit, San Francisco, CA, Oct 17-21, 1977, Reprint 3104

Co-authors: Lt Colonel W. M. Henghold and Lt Col J. D. Morgan, III, Department of Civil Engineering, Engineering Mechanics and Materials, USAFA, CO

A finite element representation for a cable subject to steady airflow is developed. Quasi-steady aerodynamics consisting of normal and tangential components is used. The model results in nonsymmetric stiffness matrices, and thus admits the possibility of both static and dynamic instabilities. A demonstration problem is worked in terms of nondimensional parameters. The problem is found to be stable.

PRESENTATIONS

Captain Anthony Eden

"Improving a Solar Energy System"

Co-author: Captain John T. Tinsley, Department of Civil Engineering, Engineering Mechanics and Materials, USAFA, CO

Presented at the American Section of International Solar Energy Society Annual Meeting, June 1977

This presentation described the continuing performance and research at the USAFA Solar Test House Laboratory. The use of three heat exchangers on the ground array, bleed air lines to eliminate trapped air, and the variation of the collector tilt were discussed as well as the decreased storage tank volume and lowered control temperature. Thermography was studied for use in determining collector performance and in making efficiency improvements.

Speeches dealing with solar energy principles and applications to include energy available, system components, economic considerations, environmental aspects and overall prospects and problems were given to:

Our Savior Lutheran Church Growth School, 26 January 1977

Air Force Academy Kiwanis Club, 24 February 1977

Colorado State University Extension Service Solar Energy Symposium, 31 March 1977

Kiwanis Club of Rampart Range, 12 July 1977

Our Savior Lutheran Church Teenagers Club, 23 November 1977

Lieutenant Colonel William M. Henghold

"Cable Equilibrium and Stability in Steady Wind"

Co-authors: Lt Colonel J. D. Morgan, III and Major J. J. Russell,
Department of Civil Engineering, Engineering Mechanics and Materials,
USAFA, CO

Presented at the ASCE Fall Convention and Exhibit, San Francisco,
CA, Oct 17-21, 1977

Major Thomas E. Kullgren

"Wind Energy Conversion Systems"

Presented to the:

Cadet Mechanics Club

Colorado Springs Rotary Club

Captain John T. Tinsley

Solar energy presentation to the Colorado Rural Electric
Association, May 1977

DEPARTMENT OF ECONOMICS, GEOGRAPHY AND MANAGEMENT

PUBLICATIONS

Lieutenant Colonel F. Theodore Helmer

"The Evaluation of Contractor Management During Source Selection"

Proceedings of the 28th Annual Conference, American Institute of Industrial Engineers, Dallas, Texas, 24-27 May 1977

This report provides the reader with a conceptual model for evaluating a contractor's management potential during source selection. The model is not a definitive outline of what must be done; rather, a discussion of a number of the variables that ought to be considered. The reader can then include only those variables most relevant to the task at hand. The model, then, should be viewed as a thought triggering device for source selection panels to define and structure contractor management evaluation during the source selection process. The evaluation of contractor management is divided into three major functional areas: planning, organizing, and controlling. A check-list of variables under each topic is included in the report, with examples of a numerical scoring system, a color-coded evaluation system, and a descriptive adjective evaluation system. The complete report concludes with a detailed example of a complete source selection numerical scoring system, including technical, cost, management, quality, reliability, experience, facilities, and contract evaluations.

"A Case Study of Information Gathering for Policy Decisions in the Public Sector"

Public Administration Review, August 1977

School administrators often find themselves responding to the voices of small, but vocal, interest groups that do not represent the needs and perceptions of the constituency. In this study, a comprehensive survey of client-systems in a medium-sized public school district is reported, with emphasis on how data on perceptions and needs can be gathered. The study shows how the data were used to influence policy decisions, and clearly defines the obligation that decision-makers have for making better-informed and responsive decisions in the public sector.

"Management Innovations in Systems Acquisition"

American Defense Policy, 4th Edition, John Hopkins University Press, Summer 1977

This article provides some historical background and then traces the evolution of the current weapons acquisition system, specifically noting the cases of the C-5A and F-111 cost overruns. He describes the different phases of the current acquisition process--conceptual, validation, full-scale development, production, and deployment. The current process is illuminated by a study of the F-16 "fly-before-buy" concept. Finally, the article presents several innovations in the management of systems acquisition which substantiate his thesis that the DoD has been successful in improving the weapons system acquisition process.

Major Gregory G. Hildebrandt

"An Econometric Study of Aerial Interdiction in Southern Laos:
10 October 1970-30 June 1971"

USARA-TR-77-4, USAF Academy Technical Report, May 1977

Co-authors: Colonel Herman L. Gilster, Directorate for International Economic Affairs, Office of the Assistant Secretary of Defense, International Security Affairs and Colonel Richard D. Duckworth, Department of Economic Studies, National Defense University, Industrial College of the Armed Forces

The purpose of this study is to gain insight into the use of air power in the interdiction campaign in southern Laos. Basic tools of economic analysis are used to evaluate the effectiveness of air resources employed in the Steel Tiger operating area from 10 October 1970 to 30 June 1971. The primary objective of the campaign--to reduce the amount of enemy supplies reaching South Vietnam and Southeast Asia variable cost factors are derived and used in conjunction with production functions estimated by the technique of regression analysis to derive optimal cost-effective sortie allocations. These allocations highlight the role of the gunship team in the interdiction effort and indicate fewer strike sorties against the enemy road network could have been flown to achieve the same level of effectiveness. Given the strike resources available, however, the variable cost of tactical air sorties actually flown was within five percent of the estimated least-cost optimum.

"Optimal Subsidy Functions"

USAF-TR-77-17, USAF Academy Technical Report, November 1977 and Discussion Paper No. 118, Discussion Papers in Economics, Department of Economics, University of Colorado, Boulder.

The report discusses the specific problem of controlling a monopoly when market demand is used as the basis for measuring benefits. The control tool used to achieve the regulators objectives is called an "optimal subsidy function." It is shown that while such an optimal function always exists for the one good case, when more than one good is involved existence requires equality of the market cross derivatives of demand with respect to price.

"Observable Preferences for Public Goods"

Journal of Public Economics 8 (1977), pp. 111-131

Co-author: Professor David Bradford, Princeton University

The article discusses the circumstances under which it is possible to use the market or aggregate demand function generated from individual utility maximization to obtain the consumers' preferences for certain classes of public goods, and thus obtain the information needed to satisfy the Samuelsonian efficiency conditions for these public goods. The restrictions on the preferences of all consumers which are sufficient to use the aggregate demand function are (i) there exists a price vector such that the level of public good provision is valueless and (ii) the marginal rate of substitution of price for the level of public good provision is independent of income.

Captain Thomas P. Huber

"Avalanche and Non-Avalanche Talus Slope Comparison, Colorado Front Range"

USAF-TR-77-14, USAF Academy Technical Report, October 1977

Comparison of three talus slopes in the Front Range of the Rocky Mountains in Colorado shows differences in their formative processes. Avalanche, rockfall, alluvial, and mudflow processes appear in differing proportions on the slopes. Development of slope profiles helps differentiate between slope-forming factors.

Major William A. Mitchell

"An Appraisal of Partial Recovery After Disaster: The Lice Earthquake of 1975"

USAFA-TN-77-1, USAF Academy Technical Note, January 1977

The 1975 Lice earthquake occurred in one of Turkey's most economically depressed eastern provinces. A massive restoration program, on a scale comparable to that after the 1970 Gediz earthquake, was implemented within days after the disaster. The vast restoration program includes building a new town of Lice and constructing over 5,000 houses throughout Diyarbakir province. Empirical analysis in the disaster region revealed both positive and negative aspects of the still continuing post disaster recovery. The application of high level technology is impractical for some restored villages. Application of intermediate level technology is more appropriate in many cases.

"Strategy and Deployment of Soviet Maritime Forces, 1962-1976: An Annotated Bibliography"

Rand Corporation, WN-9761-AF, May 1977

Co-author: Major A. Paul Tribble

A special purpose bibliography with strong emphasis on the selection of materials addressing strategy and deployment of Soviet maritime forces between 1962 and 31 October 1976. Contains work from a broad spectrum of published sources. Foremost of these are books of both American and foreign origin, periodicals, Congressional documents including both House and Senate Hearings and Reports, publications of government civilian contractors, and military intelligence reports. Both classified and unclassified sources are annotated.

"Soviet Maritime Reaction to Third World Crises, 1972-1976: An Analysis of Numbers of Ships, Duration of Involvement, and Routes"
SECRET/NOFORN

Rand Corporation, WN-10027-AF, November 1977

Co-author: Major A. Paul Tribble

Analyzes the pattern of Soviet naval and merchant ship deployment to crises in third world countries. Identification of the routes used reveals the extent to which Soviet shipping must traverse various maritime straits around the world and, hence, the relative importance of these locations for possible interdiction.

"High Yielding Mexican Wheat in Turkey (in Turkish)"

Cografya, Enstitusu Dergisi, Istanbul University, 1977

Co-author: Major A. Paul Tribble

Discusses the introduction of high yielding Mexican wheat into Turkey, and interprets several of the consequences. Addresses such problems as financing seed cost, transportation arrangements, the farmer introduction program, and acquiring fertilizer. Provides recommendations for the future use of this wheat strain in Turkey.

Book Review of Turkey: Geographic and Social Perspectives, edited by Benedict, Tumertekin, and Mansur

Geographical Survey, Vol. VI, No. 1, January 1977, pp. 36-39

"Toward An Understanding of Opium Poppy Production in Turkey"

Journal of Asian and African Studies, Vol. XII, No. 3-4, October 1977

Co-author: William B. Brundage

Analyses the Turkish decision to resume opium poppy production. Suggests that several miscalculations contributed to the unsuccessful U.S. attempt to encourage the cessation of opium poppy production in Turkey.

"Natural and Man Induced Soil Pollution

USAFA-TR-77-19, USAF Academy Technical Report, November 1977

Co-author: Sue H. Raabe, Department of Geology, University of Colorado at Colorado Springs

Soil pollution is a form of pollution that is not as readily apparent as that found in air and water but can be just as noxious. Soil pollution should be considered in any efforts to ameliorate the misuse of the environment. This report examines various forms of both naturally and humanly induced soil pollution.

"The Gravity Model for High School Students"

The Journal of Geography, Vol. 76, No. 5, pp 179-182, September/
October 1977

Co-author: Major A. Paul Tribble

The gravity model is widely used in academic instruction at the college level, but is not generally accepted for use in high schools. An appeal is made for its use at that level. The basic equation, several variations to this equation, and ways in which the model can be used in the high school classroom are presented.

Captain Arthur L. Moxon

"Review of the Application of the O&S Cost Model to the A-10 Program Contractor Incentive Award Fee"

USAF-TR-77-16, USAF Academy Technical Report, October 1977

Co-authors: C1C Michael Clark and C1C Glen Forsyth

A final review of the application of the O&S Cost Model to the A-10 Program Contractor Incentive Award Fee was undertaken at the request of Brig General Rutter, Vice-Commander of the AFALD. A research proposal was developed by the Business Research Management Center at Wright-Patterson AFB, Ohio, to address four basic areas: (1) describe the background and implementation of the O&S Cost Model as applied to the A-10 program; (2) provide a critical analysis of the technique involved; (3) identify the positive effects of the A-10 O&S Cost Model application; and (4) provide a summary of the lessons learned.

Captain Stephen H. Russell

"The Rent-Buy Decision for Military Families"

USAF-TR-77-8, USAF Academy Technical Report, July 1977

This report compares and contrasts the property appreciation and income tax savings advantages of home ownership to the cash-flow advantage of occupying government quarters. An algorithm is developed for service members to use in objectively measuring and comparing the financial advantages of each option.

Major Charles L. Smith

"Effects of Man Upon the Geomorphology of the Rampart Range, Colorado"

Ph.D. dissertation, University of Georgia, Athens, Georgia,
May 1977

The consequences of such land use categories as mining, agriculture, urbanization, forestry, road and railroad construction, and tourism upon the geomorphic processes and landforms of the Rampart Range are the focus. The time frame for the study extends from pre-historic man to 1975 with brief summaries of man's effects by the years 1849, 1910 and 1975.

"Geomorphology and Geology of the Rampart Range, Colorado"

USAFA-TR-77-10, USAF Academy Technical Report, May 1977

This report analyzes data relating to an area of a size seldom described in geomorphic or geologic articles, The Rampart Range of the Colorado Front Range and an adjacent portion of the Colorado Piedmont. The geomorphology, topography, drainage systems, and landscape of the study region are described. Geologic data relating to structure and history are also presented as are the characteristics and distribution of all geologic formations in the area.

"Evolution of Thought on Fluvial Geomorphology in the United States"

USAFA-TR-77-9, USAF Academy Technical Report, May 1977

Analyzes the formulation of the major concepts and ideas in the field of fluvial geomorphology in the United States. The discussion is divided into four sections: early history, William Morris Davis, Quantitative Revolution, and present era. Abstracts of major articles relating to the four periods are included as an Appendix.

"Determination of True Elevations from Aerial Photographs"

USAFA-TR-77-3, USAF Academy Technical Report, March 1977

There are many problems involved in the determination of accurate elevations from tilted photographs. Plotting machines such as the Wild A-7 are able to compensate for tilt and provide accurate elevations, however, these machines are expensive and not available to many researchers. This report describes a set of procedures

and a computer program for the determination of ground elevations to the same general degree of accuracy as that obtained with plotting machines. The procedures involve parallax measurements and location of points within a stereoscopic model.

"Climate, Soils and Vegetation of the Rampart Range, Colorado"

USAFA-TR-77-18, USAF Academy Technical Report, December 1977

This report reviews the climate, soils and vegetation of a segment of the Colorado Front Range and adjacent Colorado Piedmont. Variations in temperatures, precipitation, evaporation, and wind are analyzed as are the soil associations. The grassland biome, scrub biome, and coniferous forest biome and their distribution are also described.

"Energy Atlas of Colorado"

USAFA-TR-77-15, USAF Academy Technical Report, September 1977

Co-authors: Captain John Christenson, Captain John Taylor, and TSgt John Wagner

Presents the locational aspects of the energy resources available in Colorado. Resources include coal, oil and gas, uranium, oil shale, and water. The location of power plants and power transmission lines are also indicated as are those for water resources.

"Locational Analysis of Crime in El Paso County, Colorado, 1975"

USAFA-TN-77-2, USAF Academy Technical Note, February 1977

Co-author: Major A. Paul Tribble

Analyzes characteristics of the crime, the criminal, and the victim for 3,170 crimes committed in El Paso County, Colorado (exclusive of Colorado Springs) for 1975. Additionally, analyzes the spatial separation of the residences of criminals and locations of crimes for six crime categories. Examines social, economic, demographic, and distance variables in a multiple regression model in an effort to isolate causes of El Paso County crime.

"Crime in El Paso County, Colorado: A Spatial Perspective"

USAFA-TR-77-2, USAF Academy Technical Report, February 1977

Co-author: Major A. Paul Tribble

Analyzes the spatial separation of the residences of criminals and locations of crimes for six crime categories. Data pertain to El Paso County, Colorado (exclusive of Colorado Springs) for 1975. Examines social, economic, demographic, and distance variables in a multiple regression model in an effort to isolate causes of El Paso County crime.

"The Utilization of Side-Looking Airborne Radar (SLAR) in the Analysis of Karst Topography"

USAFA-TR-77-13, USAF Academy Technical Report, September 1977

Co-author: Major A. Paul Tribble

Characteristics of mechanical and synthetic radar systems are reviewed. Signature elements of karst topography such as vertical drainage pattern, knobs, and sinkholes are identified for Side Looking Airborne Radar (SLAR) imagery. SLAR imagery of the Kentucky Pennyroyal and karst areas in Florida is presented with the signature elements highlighted. Applications of SLAR imagery to the identification and mapping of karst areas in physically, climatologically, or politically inaccessible areas is addressed.

Lieutenant Colonel Robert L Taylor

"A Longitudinal Analysis of Technical Communication in Research and Development"

Journal of Technology Transfer, Spring 1977, pp. 17-32

A unique longitudinal study of the technical communication patterns of 184 engineers in a high technology research and development laboratory centers in the activities of technology gatekeepers. This two-step flow of technical information follows the literature as well as results from prior studies. Gatekeepers span the organizational boundary in the transfer of technology from outside the laboratory, while facilitating the distribution of technical information to colleagues within the organization. Sociometric data are analyzed over a five-year period with respect to changing organizational structures, new technical assignments and alterations in group composition. Despite these dynamic changes, the data reveal consistent results in gatekeeper identification and technical information flows.

"Suburban Bank"

ICCH #9-378-694, Intercollegiate Case Clearing House, Harvard University, November 1977

A case study of a real banking institution that chronicles the problems of a new independent bank during its early growth years. Leadership, competition with large holding companies, and organization create a series of interesting and complex situations for bank management.

1977 Academy of Management Proceedings

August 1977

Co-editors: Lt Colonel Michael J. O'Connell, President's Commission on Military Compensation; Dean Robert A. Zawacki, Associate Dean, College of Business and Administration, University of Colorado, Colorado Springs; Dr. D. D. Warrick, Associate Professor, University of Colorado, Colorado Springs

This volume contains the 100 best papers presented at the 37th Annual meeting of the Academy of Management held in Orlando, Florida. Policy, organization theory, management education, management history, organization development, communication and international management are some of the 17 topic areas represented. The Proceedings represent the most current management research and theory and is distributed throughout the world.

"Case Study of Information Gathering for Policy Decisions in the Public Sector"

Public Administration Review, August, 1977

Co-author: Lt Colonel F. Theodore Helmer

(See Lt Colonel F. Theodore Helmer)

Major A. Paul Tribble

"Strategy and Deployment of Soviet Maritime Forces, 1962-1976: An Annotated Bibliography"

Rand Corporation, WN-9761-AF, May 1977

Co-author: Major William A. Mitchell

(See Major William A. Mitchell)

"Soviet Maritime Reaction to Third World Crises, 1972-1976: An Analysis of Numbers of Ships, Duration of Involvement, and Routes"
SECRET/NOFORN

Rand Corporation, WN-10027-AF, November 1977

Co-author: Major William A. Mitchell

(See Major William A. Mitchell)

"High Yielding Mexican Wheat in Turkey (in Turkish)"

Cografya, Enstitusu Dergisi, Istanbul University, 1977

Co-author: Major William A. Mitchell

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"The Gravity Model for High School Students"

The Journal of Geography, Vol. 76, No. 5, pp. 179-182, September/October 1977

Co-author: Major William A. Mitchell

(See Major William A. Mitchell)

"Locational Analysis of Crime in El Paso County, Colorado, 1975"

USAFA-TN-77-2, USAF Academy Technical Note, February 1977

Co-author: Major Charles L. Smith

(See Major Charles L. Smith)

"Crime in El Paso County, Colorado: A Spatial Perspective"

USAFA-TR-77-2, USAF Academy Technical Report, February 1977

Co-author: Major Charles L. Smith

(See Major Charles L. Smith)

"The Utilization of Side-Looking Airborne Radar (SLAR) in the Analysis of Karst Topography"

USAFA-TR-77-13, USAF Academy Technical Report, September 1977

Co-author: Major Charles L. Smith

(See Major Charles L. Smith)

Major William J. Weida

"A General Technique for R&D Cost Forecasting"

USAFA-TR-77-12, USAF Academy Technical Report, September 1977

A general model for R&D cost forecasting was developed based on an expenditure pattern analysis of twenty-one current weapon systems. This model which was validated on an additional twelve weapons system, shows that R&D expenditures follow a certain, well-defined pattern, regardless of the type of system involved.

"A Parametric Model for Nuclear Warhead Costs--A Working Paper"

USAFA-TN-77-3, USAF Academy Technical Note, May 1977

This model provides a first cut at using certain data sets to predict nuclear warhead costs. Certain relationships which allowed fairly accurate cost prediction were found to exist, and these relationships were found to be significant statistically.

PRESENTATIONS

Captain C. Taylor Barnes

"A Comparative Analysis of Post Disaster Recovery in the Middle East"

Presented at the National Council for Geographic Education,
25 November 1977

Lieutenant Colonel F. Theodore Helmer

"The Evaluation of Contractor Management During Source Selection"

Presented at the 28th Annual Conference, American Institute of
Industrial Engineers, May 1977

"Procurement Research, 'Is Anybody Interested?'"

Presented at the 6th Annual DOD Procurement Research Symposium,
West Point, New York, June 1977

Major Gregory G. Hildebrandt

"Optimal Subsidy Functions" and "Performance Incentives and Planning Under Uncertainty"

Presented at the University of Colorado, Boulder, 17-18 October 1977

Major William A. Mitchell

"A Model for Public Education on Earthquake Hazard Minimization in Middle East Societies"

Presented at the National Council on Geographic Education, St. Louis, Missouri, 26 November 1977

"Perspectives on Turkish Disasters and the USAF"

Presented at the National War College, National Defense University, 25 February 1977

"Construction in Seismic Zones"

Presented at the National Invitational Workshop on Natural Hazards, Institute of Behavioral Science, NSF, Boulder, Colorado, May 1977

"Geographical Research in Turkey"

Presented at the Geographic Division of the CIA, Washington, D.C., May 1977

"The Changing Role of Women in the Middle East"

Presented at the Colorado Society of Womens' Clubs Quota, Peterson AFB Officers Club, 26 May 1977

"Seismicity and Human Adaptation to the Anatolian Fault Zone"

Presented at the Structural Geology, University of Colorado, Colorado Springs, 10 November 1977

"Partial Recovery After Disaster: The 1975 Lice Earthquake"

Presented at the 73rd Annual Meeting of the Association of American Geographers, Salt Lake City, Utah, April 1977

"Analysis of the Geographic Distribution of Academically Deficient Cadets"

Co-author: Major A. Paul Tribble

Presented to the Office of Admissions and Evaluation (RRE), USAFA, August 1977

Captain Stephen H. Russell

"Can You Beat the Stock Market"

Presented at a Faculty Brown-Bag Seminar, USAFA, 6 October 1977

"The Economist as Military Decision-Maker"

Presented to the First National Defense Colloquium, USAFA, 17 November 1977

Major Charles L. Smith

"Preparation of Maps for Use by the Federal Energy Administration by USAF Academy Cadets"

Presented at the Great Plains-Rocky Mountain Division Meeting, Association of American Geographers, Calgary, Alberta, Canada, 23 September 1977

"SLAR and the USAF Academy"

Presented at the Remote Sensing Workshop of the National Meeting of the Association of American Geographers, 23 April 1977

"Projection Systems"

Presented at the American Society of Photogrammetry and the American Congress on Surveying and Mapping, Regional Meeting, Denver, Colorado, 3 January 1977

"Crime in El Paso County, Colorado: A Spatial Perspective"

Co-author: Major A. Paul Tribble

Presented at the National Convention, Association of American Geographers, Salt Lake City, Utah, 23 April 1977

Lieutenant Colonel Robert L. Taylor

"Management by Objectives--A Management Workshop for Supervisors"

Presented at the USAF Academy, 27 January 1977

"Happiness is Self-Motivation Through Communication"

Presented to the National Secretaries Association (International),
5 March 1977

"Time Management"

Presented to the Professional Personnel Management Course,
Maxwell AFB, Alabama, 23 March 1977, 15 June 1977, and 15 August 1977

"Training Women in Management"

Presented to the Western Division, Academy of Management, Sun Valley,
Idaho, 1 April 1977

"Delegation and the Management of Time; Conducting Meetings; and Your Secretary"

Presented to the USAF Base Commanders' Management Course, Maxwell
AFB, Alabama, 12 April 1977, 20 June 1977, and 16 September 1977

"Medical Food Service Management for Dietitians"

Presented to the USAF Dietitians Workshop, Brooks AFB, Texas,
19 April 1977

"Workshop for Editorial Clerks"

Presented at the USAF Academy, 27 April 1977

"Technical Communication in Research and Development: A Longitudinal Analysis"

Presented to the Institute of Management Sciences and European
Operational Research Societies, Athens, Greece, 25-27 July 1977

"Communication and Motivation: Your Two Most Important Tools"

Presented to the Colorado Educational Secretaries Association,
Littleton, Colorado, 22 August 1977

"Management Styles"

Presented to the Colorado Fiscal Managers Association, USAF Academy,
30 September 1977

"Teaching the Basic Management Course"

Presented to the Mountain-Plains Management Conference, Omaha,
Nebraska, 14 October 1977

"You, Your Job, and Your Future II: Transactional Analysis"

Co-author: Major Gerald L. Jones, RRE, USAF Academy, CO

Presented at a luncheon seminar at the USAF Academy on 23 September
1977

Major A. Paul Tribble

"Analysis of the Geographic Distribution of Academically Deficient
Cadets"

Co-author: Major William A. Mitchell

Presented to the Office of Admissions and Evaluation (RRE), USAFA,
August 1977

"Crime in El Paso County, Colorado: A Spatial Perspective"

Co-author: Major Charles L. Smith

Presented at the National Convention, Association of American
Geographers, Salt Lake City, Utah, 23 April 1977

Major William J. Weida

"R&D Cost Forecasting"

Presented at the Procurement Research Symposium, West Point, New
York, June 1977

"Forecasting and Operations Research--Practical Examples"

Presented at LMDC, Maxwell AFB, Alabama, October 1977

"R&D Cost Forecasting"

Presented at the MORS Symposium, Naval Postgraduate School,
California, December 1977

Major Richard Wolniewicz

"In Whose Image? Church Symbols and World Views"

Presented to the Annual Meeting of the Popular Culture Association,
29 April 1977 and to St. Michael's Episcopal Parish, July 1977

DEPARTMENT OF ELECTRICAL ENGINEERING

PUBLICATIONS

Major Walter J. Atkins, Jr.

"A Theoretical Analysis of a Complex Optical Spectrum Analyzer"

PhD Thesis, University of Illinois, Urbana, Illinois, April 1977

In this thesis a system for measuring both the amplitude and phase of an optically produced Fourier transform is presented and analyzed. An interferometric technique is used to allow the computation of relative phase from measurements of spectral intensities. Possible sources of error within a realizable spectrum analyzer are modeled and analyzed. Based upon these analyses, equations are derived which predict the accuracy to be expected in measured amplitude and phase.

Captain John Erickson

"Design Techniques and Intermodulation Analysis of Broad-Band Solid-State Power Amplifiers"

Co-authors: Professor W. J. Ku, Major G. Seasholtz, Mr. R. Rabe

IEEE Transactions on Electromagnetic Compatibility, May 1977

This paper presents balanced circuit techniques for the reduction and cancellation of the dominating third-order intermodulation product generated by broad-band solid-state power amplifiers. These techniques are applicable to collocated transmitters where the interference enters through the output port of the transmitter. A rigorous derivation is presented to prove the validity of the intermodulation cancellation by using a quadrature-hybrid coupling scheme in a balanced circuit configuration. The results are valid for arbitrary non-linear characteristics exhibited by general classes of amplifiers, as well as isolators.

Major John D. German, Jr.

"An Electronic Technique for Constructing an Accurate Three-Dimensional Shroud Image"

Proceedings of the 1977 United States Conference of Research on the Shroud of Turin

This paper describes the theory, design and operation of a video amplifier system that corrects the image intensity non-linearities found in photographs of the Shroud of Turin. This correction allows the true three-dimensional quality of the shroud image to be displayed on a television screen or plotted on an x-y recorder.

Captain Raymond J. Leopold

"Space Test Program and Prioritization of Experiments"

Co-authors: Major S. Dingman, Lt S. Back

Internal USAF Paper, Washington, D.C., 1977

This interim report describes the process whereby USAF Academy personnel evaluate candidate experiments for the DoD Space Test Program. The evaluations culminate in a priority recommendation for each experiment.

Colonel Roland E. Thomas

"Slew Rate Limits in Active RC Filters"

Proceedings of the Popov Society Congress (USSR), Moscow USSR, May 1977

The finite gain-bandwidth product and the slew rate of modern integrated circuit operational amplifiers both place limits on the high frequency performance of active RC circuits. Both limits are critically dependent of the design of the passive RC circuit. At high frequency and high signal levels the slew rate limit can be more severe than the gain-bandwidth limit. A design procedure is described which relates the RC circuit design to specifications on operational amplifier performance parameters.

PRESENTATIONS

Captain Raymond J. Leopold

"Dirigibles" presented to:

Monument Kiwanis Club, January 1977

Colorado Springs Chapter of the American Meteorological Society, March 1977

DEPARTMENT OF ENGLISH

PUBLICATIONS

Captain Charles E. Beck

Contributor to Abstracts of English Studies

Volume 20, number 6, February 1977; Volume 20, number 9, May 1977

Major James C. Gaston

Contributor to the Annual Bibliography of English Language and Literature of the Modern Humanities Research Association

Volume 52, 1977

Major James A. Grimshaw, Jr.

Contributor to the Annual Bibliography of English Language and Literature of the Modern Humanities Research Association

Volume 52, 1977

"The Mistaken Identity of Rufus (Florida) Johnson"

Notes on Modern American Literature, Fall 1977, item 31

"A Contractual Examination: Another Alternative"

College English, November 1977, pages 368-370

Captain Wayne A. Myers

"100th Night 1977"

Association of Graduates Magazine, Spring 1977, page 14

Colonel Jack M. Shuttleworth

Contributor to the Annual Bibliography of English Language and Literature of the Modern Humanities Research Association

Volume 52, 1977

Captain Robert S. Staley

Daedalus

Edited Volume II of poetry by USAFA contributors, USAFA Department of English, April 1977

"Old Swingsinger Sways," "Ain't No-One Here But Us Chickens," "The Ritual," "Audience Analysis," "We Too," "Respects to Heraclitus," "Translation," "Neatness and Life"

Poems in Daedalus, Volume II, April 1977, pages 10, 23, 29, 40, 43, 49, 53, and 63.

Captain Dennis J. Stanley

An Air Force Command for Research and Development, 1949-1976: The History of ARDC/AFSC

Published by Historian's Office, AFSC, January 1977

Co-author: Captain John J. Weaver

"Manning for Research and Development in Air Force Systems Command"

Published by Historian's Office, AFSC, July 1977

Captain Kenneth E. Stevenson

"On Discussing Revolution with a Dedicated Sister"

Poem in Rocky Mountain Writer's Forum, IV, 1977, pages 209-211

"The Three-Dimensional Image on Jesus' Burial Cloth"

AIAA Journal Newsletter-Rocky Mountain High-Lite, November 1977, pages 2-3

Editor and contributor, The Proceedings of the 1977 U. S. Conference of Research on the Shroud of Turin, a Holy Shroud Guild publication.

Major William J. Wallisch, Jr.

"Effective Writing"

Intercom, 24 June 1977, page 2

Captain John J. Weaver

An Air Force Command for Research and Development, 1949-1976: The History of ARDC/AFSC

Published by Historian's Office, ASFC, January 1977

Co-author: Captain Dennis J. Stanley

"United States Defense Posture--Communications Electronics Surveillance Systems"

Published by Historian's Office, AFSC, July 1977

PRESENTATIONS

Major Donald E. Ahern

"The Deaths of Beowulf and Germanic Tradition"

Part of the UCCS Great Thoughts of Western Tradition Lecture Series, Colorado Springs, 11 April 1977

"The Historical Tradition and the Teaching of Beowulf"

Scholarly paper delivered at the Rocky Mountain Modern Language Association annual convention, Las Vegas, Nevada, October 1977

USAFA Executive Writing Course

USAFA, 5 Jan 77; USAFA, 11 May 77; USAFA, 13 Jun 77; Defense Logistics Agency (Cleveland, Ohio), 27-28 Jun 77; Fort Lee, Virginia, 5 Jul 77; Langley AFB, 6-8 Jul 77; MacDill AFB, 25-26 Jul 77; Tyndall AFB, 27-28 Jul 77; ADCOM (Colorado Springs), 26 Aug 77; Air Force Accounting & Finance Center (Denver), 19 and 21 Sep 77.

Captain Terry Bangs

USAFA Executive Writing Course

Eglin AFB, 25 Oct 77; Air Reserve Personnel Directors (Denver, Colorado), 5 Dec 77

Captain Arthur L. Barnes

"Romantic and Twentieth Century Music"

Lecture delivered to Air Academy High School Humanities class, 11 May 77

Captain Charles E. Beck

USAFA Executive Writing Course

USAFA, 11 May 77; Kelly AFB, 11-13 Jul 77; Griffiss AFB, 17-18 Oct 77; Hanscom AFB, 19-20 Oct 77; Offutt AFB, 31 Oct-3 Nov 77

Captain Kathryn A. Brown

USAFA Executive Writing Course

USAFA, 14 Apr 77

Major Robert B. Donovan

"Intra-Institutional Liaison in Teaching Technical Writing"

Discussion led at annual convention of Conference on College Composition and Communication, Kansas City, Missouri, 31 Mar-2 Apr 77

USAFA Executive Writing Course

Fairchild AFB, 18-20 Jul 77; Eglin AFB, 25 Oct 77; Scott AFB, 28 Nov-1 Dec 77

Lieutenant Colonel Arthur G. Elser

"Getting the Rest of the Faculty to Help Maintain Writing Standards"

Lecture delivered at the Sixth Annual Wyoming Conference on Freshman and Sophomore Composition, University of Wyoming, 28 Jul 77

USAFA Executive Writing Course

Martin Marietta (Denver, Colorado), 5 May 77; USAFA, 13 Jun 77; ADCOM (Colorado Springs), 26 Aug 77; Air Force Accounting & Finance Center (Denver, Colorado), 20 and 22 Sep 77

Major James C. Gaston

"The Earl of Bute and George Germain: Machiavels of the American Revolution as Seen by London's Poets, 1763-1783"

Scholarly paper delivered at the Annual Convention of the South Central Society for Eighteenth-Century Studies, Houston, Texas, 4 Mar 77

USAFA Executive Writing Course

USAFA, 19 Jan 77; Wright-Patterson AFB, 18-19 Jul 77; ADCOM (Colorado Springs), 31 Aug 77; USAFA, 4 Nov 77

Major James A. Grimshaw, Jr.

"Poetry"

Lecture given to Air Academy High School Writer's Clinic, 19 Apr 77

USAFA Executive Writing Course

Randolph AFB, 12-13 Apr 77

Captain Charles E. Miller

"The Use of Paraphrasing in Intercollegiate Debate"

Lecture given at Western States Communication Association Annual Convention, Arizona State University, 24 Nov 77

Major Thomas A. Murawski

USAFA Executive Writing Course

USAFA, 4 Feb 77; HQ, CHAMPUS (Denver, Colorado), 16 Mar 77; Offutt AFB, 26-28 Apr 77; National Guard Bureau (Washington, D.C.), 23-24 May 77; HQ USAF/DA (Washington, D.C.), 26 May 77; Air Staff (Washington, D.C.), 27 May 77; Edwards AFB, 20-22 Jun 77; Nellis AFB, 23-24 Jun 77; Wright-Patterson AFB, 18-19 Jul 77; Air Staff (Washington, D.C.), 1-2 Aug 77; Air Reserve Personnel (Denver, Colorado), 9 Sep 77; Griffiss AFB, 17-18 Oct 77; Hanscom AFB, 19-20 Oct 77; Air Staff (Washington, D.C.), 14-15 Nov 77; National Guard Bureau (Washington, D.C.), 16-17 Nov 77; Scott AFB, 28 Nov-1 Dec 77; Air Reserve Personnel Directors (Denver, Colorado), 5 Dec 77

Captain Philip A. Powell

"Detective Fiction"

Address to USAFA Library Staff, 26 May 77

Captain Blaine M. Rockwell, Jr.

"Science Fiction"

Lecture given during Futurism Symposium at West Junior High School, Colorado Springs, 29 Apr 77

"The Post-War Japanese Society as Reflected in Japanese Science Fiction Movies"

Lecture given at Western Conference of the Association for Asian Studies, USAFA, 7 Oct 77

Colonel Jack M. Shuttleworth

"Writing in College"

Address delivered in three college preparatory classes, Air Academy High School, 19 Apr 77

USAFA Executive Writing Course

USAFA, 4 Nov 77; Wright-Patterson AFB, 5-7 Dec 77

Lieutenant Colonel Ernest P. Sims

USAFA Executive Writing Course

Wright-Patterson AFB, 5-7 Dec 77

Captain Robert S. Staley

"Cadet Creative Writing at USAFA"

Address given at Lewis Palmer High School, 16 Dec 77; also given at Air Academy High School, 23 Apr 77

USAFA Executive Writing Course

HQ CHAMPUS (Denver, Colorado), 16 Mar 77; Martin Marietta (Denver, Colorado), 5 May 77; Fairchild AFB, 18-20 Jul 77; Norton AFB, 29-30 Sep 77; Surgeon General (Washington, D.C.), 7 Nov 77; OSI (Washington, D.C.), 8-9 Nov 77

Captain Kenneth E. Stevenson, Jr.

"The Possible Phylactery on the Shroud of Turin"

Address given to the London Symposium of Research on the Shroud of Turin, Aug 77

Major William J. Wallisch, Jr.

"Human Communication"

Lecture given at Air Academy High School, Apr 77

"Communication and Creativity"

Lecture given at Air Academy High School, May 77

USAFA Executive Writing Course

Edwards AFB, 20-22 Jun 77; Nellis AFB, 23-24 Jun 77; Air Staff (Washington, D.C.), 1-2 Aug 77; Offutt AFB, 31 Oct-3 Nov 77; Air Staff (Washington, D.C.), 14-15 Nov 77; National Guard Bureau (Washington, D.C.), 16-17 Nov 77

Major Rodney A. Wells

USAFA Executive Writing Course

USAFA, 14 Apr 77

Major Michael A. Whitehorn

USAFA Executive Writing Course

Randolph AFB, 12-13 Apr 77; National Guard Bureau (Washington, D.C.), 23-24 May 77; HQ USAF/DA (Washington, D.C.), 26 May 77; Air Staff (Washington, D.C.), 27 May 77; Kelly AFB, 11-13 Jul 77; Norton AFB, 29-30 Sep 77; Surgeon General (Washington, D.C.), 7 Nov 77; OSI (Washington, D.C.), 8-9 Nov 77

Major David C. Whitlock

USAFA Executive Writing Course

USAFA, 19 Jan 77; Offutt AFB, 26-28 Apr 77; Defense Logistics Agency (Cleveland, Ohio), 27-28 Jun 77; Fort Lee, Virginia, 5 Jul 77; Langley AFB, 6-8 Jul 77; MacDill AFB, 25-26 Jul 77; Tyndall AFB, 27-28 Jul 77; ADCOM (Colorado Springs), 31 Aug 77

DEPARTMENT OF FOREIGN LANGUAGES

PUBLICATIONS

Major James W. Hutchison

"Some Preliminary Hypotheses on the Semiotic Microcosm of Gottfried's Tristan"

Semiotics: Journal of the International Association for Semiotic Studies, 20:1/2, 1977

Captain Frank W. Kyriopoulos

"Arabic Sound and Script Workbook"

Workbook utilized in Arabic 131, Basic Arabic

A workbook that helps students to read and write Arabic script. It is designed to be used with a locally produced cassette tape program so the student hears the sound while he is writing the script. The workbook also includes transformation exercises to teach the student to convert romanized Arabic script to true Arabic script and vice versa.

"Some Aspects of Economic, Political and Religious Change in the Middle East"

MA Thesis

This thesis deals with three important historical problems in the Middle East: The European Economic Community and the Middle East from 1957 to 1967; the Communist Party of Iraq from 1958 to 1960; and Islamic law and Islamic modernist movements in Egypt. Of these subtopics, the problem of modernization in Islam is very relevant to most Middle Eastern countries today. A copy is on file in the Cadet Library.

PRESENTATIONS

Captain Frank W. Kyriopoulos

"Why Effective Communication is Important to a USAF Career"

Lecture given to several English Department sections, USAF Academy, 6 October 1977

Captain Peter Puhl

"Military and Business in USA and Europe"

Speech at Rotary Club, Colorado Springs, Colorado, 21 December 1977

Captain Barbara U. Riley

"Career Opportunities in Foreign Languages"

Panel discussion at South Junior High School, Colorado Springs,
Colorado, 15 November 1977

"Contemporary German Customs"

Speech at Doherty High School, Colorado Springs, Colorado,
22 November 1977

DEPARTMENT OF HISTORY

PUBLICATIONS

Major Robert S. Bartanowicz

"Jackie Cochran Takes 1st Steps for Women: Remains 'America's First Lady of Aviation'"

Falconews, 26 August 1977

Discusses the aviation career of Jackie Cochran and her many "firsts" in aviation as both an aviator and woman

Book Review of The French Against the French by Milton Dank

Infantry, January-February 1977

Book Review of Poland and the Coming of the Second World War: The Diplomatic Papers of A.J. Drexel Biddle Jr., United States Ambassador to Poland, 1937-1939 by Philip V. Cannistrato, Edward D. Wynot Jr., and Theodore P. Kovaleff, Editors

Military Review, February 1977

Book Review of The Superwarriors: The Fantastic World of Pentagon Superweapons by James W. Cannon

Air University Review, May-June 1977

Book Review of The Night Will End: Memoirs of a Revolutionary by Henri Frenay

Infantry, November-December 1977

Major Donald R. Baucom

Book Review of Duel Between the First Ironclads by William C. Davis

Infantry, December 1977

Captain Donald M. Bishop

"A Korean at Oxford"

The Emory Magazine, Vol. 52, No. 3 (1977), pp. 8-13

Describes the experiences of the Korean political exile Yun Chi-Ho (1864-1945) while living in the United States as a college student at Emory College in Oxford, Georgia, from 1891 to 1893. Yun was sponsored at the college by its president, the noted Methodist educator, Warren Candler. His American experiences had a great impact on Yun's modernist thinking and subsequent career as a diplomat, journalist, educator, patriot, and Christian statesman.

"Reflections on a Year in Vietnam: Leadership, Followship, Unit Spirit"

Air Force Magazine, December 1977, pp. 52-56.

Examines the author's experiences in a security police squadron in Vietnam in 1969 and 1970 to derive lessons on the combat motivation of USAF ground support personnel.

The article has been adopted as a required reading at the USAF Base Commanders Course at Maxwell AFB, AL: in selected sections of Behavioral Science 302 at the USAFA; and for all senior Air Force ROTC cadets at the Citadel, the Military College of South Carolina.

Book Review of Peace Soldiers: The Sociology of a United Nations Military Force by Charles C. Moskos

Infantry, March-April 1977

Captain Ronald G. Boston

Book Review of The Dragon's Wings: The China National Aviation Corporation and the Development of Commercial Aviation in China by William H. Leary, Jr.

Aerospace Historian, June 1977

FSO Edward P. Brynn

Book Review of The Church of Ireland 1869-1969 by R.B. MacDowell

Church History, January 1977

Book Review of The Roman Catholic Church and the Creation of the Modern Irish State, 1878-1886 by Emmet Larkin

Church History, March 1977

Book Review of The Church of Ireland: Ecclesiastical Reform and Revolution, 1880-1885 by Donald Harmon Akenson

Historical Magazine of the Protestant Episcopal Church, September 1977

Captain Arthur A. Durand

Book Review of Between North and South: A Maryland Journalist Views the Civil War by Bayly Marks and Mark Norton

Military Affairs, July 1977

Captain Robert C. Ehrhart

Book Review of Peace Soldiers: The Sociology of a United Nations Military Force by Charles C. Moskos

Air University Review, August 1977

Colonel Alfred F. Hurley

"Hoyt S. Vandenberg, Sr."

The Dictionary of American Biography. New York: Charles Scribners' Sons, 1977

A biographical sketch of the career of the senior General Vandenberg, written with special attention to his contributions to the history of air power.

Book Review of Developing the ICBM: A Study in Bureaucratic Politics by Edmund Beard

Journal of American History, December 1977

Lieutenant Colonel David MacIsaac

Book Review of Memoirs of My Services in the World War, 1917-1918
by General George C. Marshall

Air Force Magazine, February 1977

Book Review of World War I in the Air: A Bibliography and Chronology
by Myron J. Smith, Jr.

Naval War College Review, December 1977

Book Review of The Brereton Diaries by Lewis H. Brereton

Naval War College Review, December 1977

Book Review of The Lessons of Vietnam edited by W. Scott Thompson
and Donaldson D. Frizzell

Air Force Magazine, December 1977

Book Review of Doolittle: A Biography by Lowell Thomas and Edward
Jablonski

Military Review, December 1977

Major Alan M. Osur

Blacks in the Army Air Forces during World War II: The Problem
of Race Relations (Washington DC: GPO, 1977) xiii, with illustra-
tions pp. 227

Studies the treatment of blacks in the AAF during WWII, focusing on
the problem of race relations. Four themes are apparent from the
war: segregation was the official policy, but it did not achieve
"separate but equal" as facilities and opportunities for blacks
were inferior to those of whites; protest was necessary to effect
change; leadership determined the degree of racial harmony attained;
and out of the war emerged ambiguous ideas about the future employ-
ment of blacks.

Abstracts for ABC CLIO for their computerized data bank

These abstracts are of articles in Military Affairs

Lieutenant Colonel Jon A. Reynolds

"A Question of Honor"

Air University Review, March-April 1977

Addresses issues and questions raised by Colonel John Dramesi in his controversial book on PW conduct entitled Code of Honor. Major issues examined include "early release" and leadership as it was exercised in North Vietnam.

Commentary to "The Faceless POW," by William K. Carr

Naval War College Review, Fall 1977

Takes exception to Mr. Carr's thesis that PW's could and should improve their treatment by adapting their behavior to fit their captor's culture.

Book Review of The Raid by Benjamin F. Schemmer

Air Force Magazine, April 1977

Major John F. Shiner

"Post War Defense Policy: The First Twenty Years"

Modern Warfare and Society (History 202 text produced by the Department of History, USAFA, 1977)

Examines American defense policy between 1945 and 1965. Discusses the problems caused by post-war demobilization, the adoption of strategic air power as the key ingredient in the U.S. defense system, the advent of the doctrine of Massive Retaliation--with its resulting cuts in conventional capability--as well as the birth and growth of flexible response under Kennedy and Johnson.

Book Review of New Civil-Military Relations: The Agonies of Adjustment to Post-Vietnam Realities by John F. Lovell and Phillip S. Kronenberg

Air University Review, May-June 1977

PRESENTATIONS

Major Robert S. Bartanowicz

"The Renaissance"

Fountain-Fort Carson Colorado High School, 19 January 1977

Dealt with the history of the Renaissance in terms of art, science, and economic growth. This presentation was part of the Fountain-Fort Carson High School "Renaissance Festival."

Captain Donald M. Bishop

"Korean Children in American Schools: History, Problems, Perspectives"

Special Education Study Group, University of Colorado at Colorado Springs, 29 September 1977

Captain Arthur A. Durand

"The Spirit of Survival"

Optmist Breakfast Club, Colorado Springs, CO, February 1977

"A Tribute to the Indomitable Spirit of the American Fighting Man"

Eleventh Squadron Dining-Out, USAF Academy, CO, March 1977

"The Home Squadron, 1840-1861"

U.S. Naval Academy Naval History Symposium, Annapolis, MD, October 1977

"Stalag Luft III: A Case Study in the Humane Treatment of Prisoners of War in a Hostile Environment"

American Historical Association Conference, Dallas TX, December 1977

"Holidays in Captivity"

Sertoma Noonday Club, Colorado Springs, CO, December 1977

Colonel Alfred F. Hurley

"Post World War II Planning: The Army Air Forces".

The National War College, Washington DC, January 1977

"Strategy and Technology Between World War I and II"

The National War College, Washington DC, November 1977

Lieutenant Colonel David MacIsaac

"Air Power in World War II"

Air War College, Maxwell AFB, AL, 10-11 January 1977 (Participant with Generals Curtis E. LeMay, Ira C. Eaker, and Haywood S. Hansell, Jr., in a two-day series of panel discussions)

"The World War II experience and the Origins of Nuclear Strategy"

The National War College, Washington DC, 13 January 1977

"Strategic Air Power in World War II"

Army War College, Carlisle Barracks, PA, 4 April 1977

"The Study of Clausewitz"

Naval War College, Newport, RI, 2-3 May 1977

"History and Military Education in the U.S. Air Force"

National Conference of the Inter-University Seminar on the Armed Forces and Society (IUS), University of Chicago, Chicago, IL, 20 October 1977

Captain Thomas F. Menza

"13th Century Mongol Influence on the European Renaissance"

University of Colorado at Colorado Springs Phi Alpha Theta/History Honorary Society, March 1977

Major Alan M. Osur

"Traditional Indian Culture and Its Interface with Mainstream American Society"

Mitchell High School, Colorado Springs, CO, 5 October 1977

Squadron Leader Malcolm Shaw (RAF)

"Africa-Today and Tomorrow"

The English Speaking Union, Colorado Springs, CO, 19 October 1977

"The Battle of Britain"

Wasson High School, Colorado Springs, CO, 19 October 1977

Major John F. Shiner

"The Divergence of Policy and Power: The American Military and Postwar Foreign Policy, 1945-47"

Conference on War and Diplomacy, The Citadel, Charleston, SC,
12 March 1977

Squadron Leader Malcolm Shaw (RAF)

"Africa-Today and Tomorrow"

The English Speaking Union, Colorado Springs, CO, 19 October 1977

"The Battle of Britain"

Wasson High School, Colorado Springs, CO, 19 October 1977

Major John F. Shiner

"The Divergence of Policy and Power: The American Military and Postwar Foreign Policy, 1945-47"

Conference on War and Diplomacy, The Citadel, Charleston, SC,
12 March 1977

DEPARTMENT OF LAW

PUBLICATIONS

Colonel Marcos E. Kinevan

Book, Personal Estate Planning (12th ed., 1977, 142 pp)

A primer on estate accumulation techniques and dispositive arrangements, particularly as they apply to military personnel. Includes consideration of casualty insurance, government survivor benefits, estate programming, the fundamentals of life insurance and investments, trusts and other non-probate transfers, husband-wife property ownership arrangements, and wills. The 12th edition updates the 1975 edition in several areas, including the impact on dispositive plans of the gift and estate tax provisions of the 1976 Tax Reform Act.

PRESENTATIONS

Major Phillip A. Johnson

"Personal Estate Planning"

Peterson AFB, Colorado, 24 January 1977

Air War College, Maxwell AFB, Alabama, 8 February 1977

USAF Senior NCO Academy, Gunter AFB, Alabama, 9 February 1977

Retiree Day, USAF Academy, Colorado, 8 October 1977

"Wills and Trusts"

DF Personnel, USAF Academy, Colorado, 15 November 1977

"Integrity in the Air Force"

First Class, USAF Academy, Colorado, 30 April 1977

"Current Constitutional Issues"

Rhodes Scholar Candidates, USAF Academy, Colorado, 11 October 1977

Major Edwin F. Hornbrook

"Principles of Life Insurance"

DFACS, 22 April 1977

USAFA Faculty Seminar, 31 October 1977

USAFA Faculty Seminar, 1 November 1977

Colonel Marcos E. Kinevan

"Investments"

USAFA Faculty Seminar, 8 November 1977

Lieutenant Colonel Richard R. Lee

"Personal Estate Planning"

Maxwell AFB, AL, 8-10 February 1977

McChord AFB, WA, 12-15 May 1977

Gunter AFS, AL, 4-6 August 1977

Air Command & Staff School, C1 of 78, Maxwell AFB, AL, 5-9 October 1977

Air Force Systems Command, Andrews AFB, WA, 11-14 December 1977

Captain Robert J. Wilson, Jr.

"Survivors Benefits and Estate Programming"

DFACS, 26 April 1977

USAFA Wives Day, 4 May 1977

USAFA Faculty Seminar, 17 October 1977

USAFA Faculty Seminar, 18 October 1977

DEPARTMENT OF MATHEMATICAL SCIENCES

PUBLICATIONS

Major Daniel W. Litwhiler, Jr.

Large Region Location Problems

PhD dissertation, University of Oklahoma, May 1977

Algorithms for solving single facility deterministic location problems in which the planar assumption is not appropriate are described. Transformations on the non-Euclidean spherical space are combined with efficient E^1 solution techniques. The objectives of minimizing the total sum of costs and minimizing maximum distance are considered, along with extensions to the multi-facility minisum and minimax problems. Computational experience for a number of test problems is reported.

Major Charles R. Mitchell

"The Effect of Correlated Exponential Service Times on Single Server Tandem Queues"

Naval Research Logistics Quarterly, Mar 77, Vol 24, No. 1

Presented at 137th Annual Meeting of American Statistical Association, Chicago, IL, Aug 77

An investigation via simulation of system performance of two stage queues in series (single server, first-come, first-served) under the assumption of correlated exponential service times indicates that the system's behavior is quite sensitive to departures from the traditional assumption of mutually independent service times, especially at higher utilizations. Since tandem queues occur frequently, e.g. production lines and the logistics therewith associated, it is incumbent on both the practitioner and the theoretician that they be aware of the marked effects that may be induced by correlated service times.

Major J. C. H. Smith

"A Method for Simulating Subsurface Disposal of Herbicides"

Weed Science, Vol 25, Jul 77

Co-authors: J. M. Cupello, A. L. Young

Specially designed growth boxes were used to simulate field subsurface disposal of phenoxy herbicides. Sorghum seedlings were grown in stainless steel inserts placed in plexiglass boxes containing various soil treatments. Plant height data were collected periodically for all treatments and were analysed using multiple regression techniques to determine differences in plant growth models. The results showed that subsurface disposal of phenoxy herbicides significantly altered plant growth.

PRESENTATIONS

Major Brian E. Esterby

Seismic Network Evaluation Through Simulation

Presented at 40th Military Operations Research Society (MORS) Symposium, U.S. Naval Postgraduate School, Monterey, CA, December 1977

Co-author: Major Jay D. Sherman, Department of Mathematical Sciences, USAF Academy, CO

The United States operates and maintains a network of seismic stations designed for monitoring underground nuclear tests. This network must detect, accurately locate and identify seismic signals emanating from explosions. A method of evaluating networks and component stations has been designed that simulates each component of the underground nuclear monitoring process: detection, location and identification. This algorithm can be used to compare the effectiveness of different networks and stations at different source locations throughout the world.

Major Jay D. Sherman

Seismic Network Evaluation Through Simulation

Presented at 40th Military Operations Research Society (MORS) Symposium, U.S. Naval Postgraduate School, Monterey, CA, December 1977

Co-author: Major Brian E. Esterby, Department of Mathematical Sciences, USAF Academy, CO

(See Major Brian E. Esterby)

Major Raymond M. Zazworsky

"Controllability and Observability of Linear Time-Invariant Compartmental Models"

Presented at International Conference on Mathematical Modeling, St Louis, MO, Aug 77

Statements on complete controllability (CC) and complete observability (CO) of linear, time-invariant compartmental models are proven by using graphical constructions. The graphical constructions are useful because of an unique decomposition of a model's digraph into sources, sinks, and transits. The main results are: (1) a model is CO if and only if a compartment from each sink is observed, (2) a single sink model is CC if and only if a compartment from each source is controlled, and (3) a model is CC if the set of excitations include one of the excitation sets provided by a controllability algorithm.

DEPARTMENT OF PHILOSOPHY AND FINE ARTS

PUBLICATIONS

None

PRESENTATIONS

Captain Arthur L. Barnes

"Romanticism in Music and Literature"

Seminar for English Department, USAF Academy, CO, 28 October 1977

"Romanticism in Music and Literature"

TV tape for History Department, USAF Academy, CO, 15 December 1977

Captain John W. Bois

"Hinduism"

Little Parish Group of Divine Redeemer Catholic Church, Colorado Springs, CO, 13 October 1977

"Confucianism"

Little Parish Group of Divine Redeemer Catholic Church, Colorado Springs, CO, 27 October 1977

"Hinduism"

Academy High School class, USAF Academy, CO, 5 December 1977

"Islam"

Benet Hill Academy, Colorado Springs, CO, 16 December 1977

Professor Robert L. Cunningham

"Experimentation and Informed Consent: The Case of Prisoners"

Colorado Springs Chapter of Sigma Psi, CO, 20 September 1977

"Work for Prisoners"

Prisoners Union, San Francisco, CA, 14 November 1977

Captain Richard E. Hughen

"Hinduism"

Benet Hill Academy, Colorado Springs, CO, 23 September 1977

"Buddhism"

Little Parish Group of Divine Redeemer Catholic Church, Colorado Springs, CO, 20 October 1977

"Taoism"

Little Parish Group of Divine Redeemer Catholic Church, Colorado Springs, CO, 3 November 1977

"Buddhism"

Air Academy High School, USAF Academy, CO, 8 December 1977

Colonel Malham M. Wakin

"Managerial Integrity"

Seminar for advanced management personnel, Maxwell AFB, AL, 17 June and 16 September 1977

"Ethics for Commanders"

A seminar provided for the Base Commanders Course, Maxwell AFB, AL, 17 June and 16 September 1977

"The Military Profession"

Workshop for AOC's and MS instructors at the USAF Academy, CO, four-week series, October 1977

"The Nature of Man"

Inter-American Defense College, Washington, D.C., 12 September 1977

"Ethics, Management, and Leadership"

Command and Staff College Seminar, USAF Academy, CO, 19 October 1977

"Work and Vocations"

Colorado State Institutions Chaplains, USAF Academy, CO, 17 November 1977

"Islam"

Air Academy High School, USAF Academy, CO, 16 December 1977

Major Kenneth H. Wenker

"Managerial Ethics"

Professional Management for Executives Course, Army Health Services
Command, Austin, TX, 30 September 1977

DEPARTMENT OF PHYSICS

PUBLICATIONS

Captain Wayne J. Anderson

"Ultraviolet Windows in Commercial Sunglasses"

Applied Optics, Vol 16, page 515, February 1977

Co-author: Radames K. H. Gebel

The optical transmission of a random selection of nonprescription sunglasses was measured from 0.3- μ m to 0.85- μ m wavelength. Several models were found with uv windows that may increase the probability of cataract formation on the eye lens. More than half of the twenty-five models tested had ir windows that may cause eye discomfort with prolonged usage. In the tested glasses, there appears to be no correlation between lens color or cost and the amount of shielding given to the eyes from the radiation not contributing to the visual response.

"Optical Characterization of Thin Films"

Journal Optical Society of America, Vol 67, page 1051, August 1977

Co-author: W. N. Hansen

A previously presented method of measuring simultaneously both the complex refractive index and thickness of a thin film is shown to work successfully on a variety of thin films. The reliability of the optical constants is shown both by comparing their repeatability with several different methods and by comparison of the calculated and measured reflectance from the film as a function of angle of incidence.

"Ellipsometric Measurements of Radiation Damage in Gap"

Journal of Applied Physics, Vol 48, November 1977

Co-author: Y. S. Park

The ellipsometer is used to measure radiation damage in Gap crystals as a function of dose. The results are compared to those obtained from backscattering measurements.

Captain Richard W. Davis

"Uranium LIS Long Range Program Plan"

CLYA 77-136, Lawrence Livermore Laboratory, June 1977 (C)

Co-authors: Dr. J. I. Davis, Dr. J. Z. Holtz

At the request of the ERDA Office of Alternate Isotope Separation Technology, a program plan was generated to outline technological milestones and necessary funding to achieve an operational uranium laser isotope separation plant by the early 1990's. Budget projections including operating, equipment, and construction were made on a yearly basis from FY 79 through FY 87. Two base case atomic vapor plant point designs with various component options were discussed and an economic evaluation performed. The results indicate that atomic vapor LIS can be very attractive when compared to conventional enrichment techniques.

"LIS Application Study"

Volume I Study Outline
Volume II Thermal Reactors

UCRL-52194, Lawrence Livermore Laboratory, January 26, 1977 (C)

Co-authors: Dr. S. Winter, Dr. M. Schwab, Dr. J. Dubrin

Recent experiments and cost estimates for enriching U-235 using laser isotope separation (LIS) look very promising. Stimulated by these findings, this series of volumes identify other applications in which LIS could be applied to advantage. Volume I identifies and briefly discusses the multitude of LIS applications in thermal reactors, advanced reactors, medical use, agricultural studies, research, and radioisotope power. Volume II is devoted to applications that are thermal reactor related such as beneficial products from spent-fuel, waste disposal, moderators, and fuel preparation.

"Outline of Pu-LIS Program for Civilian and Military Applications"

CLYA 77-83, Lawrence Livermore Laboratory, February 3, 1977 (S)

Co-author: Dr. J. I. Davis, Dr. J. W. Dubrin

This report discusses the various applications associated with isotopically pure plutonium. A program plan discussing possible laser isotope separation stage designs and development scenario selection is included. DOD and DMA coordination requirements are also discussed.

"Laser Isotope Separation Program"

Chapter 8 of UCRL-50021-76, Lawrence Livermore Laboratory (LLL),
June 1977

Co-author: Dr. J. I. Davis

The major goal of LLL's Laser Isotope Separation (LIS) Program is to develop economically viable laser processes for the large-scale enrichment of uranium for light-water nuclear reactor fuel. This chapter in the laser program annual report gives an overview of this LIS program including a component process description, required process research, component development, and economic analysis.

Captain Rolf C. Enger

Solar Electric Generating System Resource Requirements and the
Feasibility of Orbiting Solar Reflectors

Masters Thesis, Air Force Institute of Technology, December 1977

The potential consumption of materials, land, water, manpower, energy, and money was evaluated for four solar electric generating systems: a terrestrial solar thermal, a terrestrial photovoltaic, an orbiting solar reflector, and a satellite solar power system. The evaluation demonstrated that, per megawatt of electrical generating capacity, the terrestrial systems would consume less resources than the extra-terrestrial systems. In addition, construction of terrestrial systems would be technologically simpler and environmentally safer.

Major Edward A. Peterson

"Reversible, Field Induced Agglomeration in Magnetic Colloids"

Journal of Colloid and Interface Science, Vol 62, No. 1, October 15, 1977

Co-author: David A. Krueger

Reversible agglomeration of magnetic particles (20-300 \AA diameter) in a colloidal suspension has been induced by applying various magnetic fields: nonuniform static fields and uniform ac or dc field fields of magnitudes 2.5 to 230 Oe. A sensitive Colpitts oscillator circuit monitored the spatial and temporal variations in magnetization in a vertical 11-cm column of magnetic fluid. The results are consistent with the hypothesis that spherical agglomerates of 10^7 - 10^9 particles are formed and settle gravitationally.

Major Robert C. Schaller

"Theories of Condensation - Freezing and Deposition Nucleation for Ice by Aerosol Particles"

9th International Conference on Atmospheric Aerosols, Condensation and Ice Nuclei, 21-27 September 1977, Galway, Ireland

Co-author: N. Fukuta, Department of Meteorology, University of Utah, Salt Lake City, Utah

Results of this study are as follows: The deposition nucleation theory failed to describe the data in the zone slightly below water saturation. An empirical expression for the deposition nucleation observed was formulated. Condensation freezing nucleation theory, assuming that the nucleation proceeds as a consecutive process of heterogeneous condensation followed by the freezing of condensed water, described the data well. Nucleation isopleths for deposition and condensation-freezing nucleations were reconstructed three dimensionally.

PRESENTATIONS

Captain Wayne J. Anderson

"Optical Representation of Thin Films"

March National Meeting of the American Physical Society, San Diego, California, March 1977

Utah State University, March 1977

"Radiation Damage Flux Dependence in GaAs"

March National Meeting of the American Physical Society, San Diego, California, March 1977

Air Force Systems Command, Science and Engineering Symposium, Wright-Patterson AFB, Ohio, October 1977

The Flux dependency of radiation damage was demonstrated by using Electroreflectance measurements. Minimum damage was detected for some implant conditions that were discussed.

"Ultra Violet Windows in Sunglasses"

Interview on National Public Radio System "All Things Considered Program," April 1977

Interview on Canadian Broadcasting System News, May 1977

Captain John P. Cipriano

"Basic Principles of Rampart Range Weather"

A Presentation to Janitell Jr. High School Earth Science Classes

Surface and upper air charts were utilized to discuss the weather across the country. Principles of cloud formation were presented, as well as a qualitative discussion of Föhn's Compensation. These principles were then used to describe the three weather systems which primarily result in adverse weather along the Rampart Range. Finally, the mountain-valley breeze was discussed and explained.

Captain Rolf C. Enger

"Solar Electric Generating System Resource Requirements"

Co-author: Lt Col Hugo Weichel, Air Force Institute of Technology,
Wright-Patterson AFB, Ohio 45433

1977 Fall Meeting of the Ohio Section of the American Physical
Society held on the campus of Miami University at Oxford, Ohio
on 21-22 October 1977

Major Edward A. Peterson

"Integrating Mathematical Physics into the Physics Majors Course Matrix"

48th Annual Joint Meeting Colorado-Wyoming Academy of Science, Am Assn.
of Physics; Teachers, U. S. Air Force Academy, CO, 22 April 1977

Mathematics must be an integral part of an undergraduate physics program.
When a curriculum revision at the U. S. Air Force Academy reduced the
number of elective courses available for the physics major, it became
necessary to incorporate mathematics topics within physics courses.
Consequently, a mathematical physics text is then used as an integral
part of all subsequent courses for physics majors.

"Reversible, Field Induced Agglomeration in Magnetic Colloids"

UNESCO Conference and Workshop on the Thermomechanics of Magnetic Liquids,
Udine, Italy, 3 October 1977

Major Robert C. Schaller

"The United States Air Force Academy's Summer Scientific Seminar"

American Association of Physics Teacher's Winter Meeting, Chicago, IL,
February 6-10, 1977

The Air Force Academy held its first Summer Scientific Seminar from June
20-25, 1976. The purpose of the seminar was to enable high school seniors
to perform laboratory experiments in the fields of Aeronautics, Astro-
nautics, Computer Science, Mathematics, Physics, Physiology, Chemistry,
Electrical Engineering, Civil Engineering, and Engineering Mechanics.
Cost to each student was \$25.00 plus transportation.

DEPARTMENT OF POLITICAL SCIENCE

PUBLICATIONS

Lieutenant Colonel John E. Endicott

American Defense Policy, 4th Edition, Johns Hopkins University Press

Co-editor: Major Roy W. Stafford, Jr.

The fourth in the series of defense policy readers published by the department. It includes introductory pieces and edited articles on the full spectrum of issues arising in the process to assure us the best national defense. This issue stresses process but not to the exclusion of other meaningful areas of study; for example: the development of US strategy, arms control, limited war, and the role of the military in a changing social and cultural environment.

"Japan: The 1975-1976 Debate Over Ratification of the NPT"

Asian Survey, March 1977, University of California

This article traces the time consuming aspects of achieving consensus in first, the Liberal Democratic Party and second, the opposition parties. A case study of the groups that formed to oppose and support ratification. Subtitle is "Eight Years is a Long Time to Wait" which was the time required to reach consensus.

Captain Schuyler Foerster

"Tsar and Commissar: Historical Themes of Soviet Military Power" - videotape - 65 min, produced by HQ AF Intelligence Service and AF Television

Traces themes of ideology, modernization, despotism, and expansionism through Russian and Soviet history, ending with legacy and experience of World War II.

Captain Charles L. Fox

Proceedings - Nineteenth Air Force Academy Assembly, editor, June 1977

Lieutenant Colonel Michael A. Freney

"The Political Element in Professional Military Expertise"

American Defense Policy, 4th Edition, by John E. Endicott and Roy W. Stafford, Jr., Baltimore, Johns Hopkins University Press, 1977

Captain Ralph A. Froehlich

"The Ideology of Preparedness"

Book Review of Preparing for the Next War - American Plans for Postwar Defense, 1941-45, Michael S. Sherry, New Haven, Conn, Yale University Press, 1977

Captain William R. Heaton, Jr.

"The Minorities and the Military in China"

Armed Forces and Society, Vol 3, No. 2 (Feb 77), pp 325-342

The PLA has a significant role in China's border regions which are inhabited by national minorities. The PLA provides political order and security, contributes to the recruitment and training of officials and militia, participates in production and construction, and engages in political socialization. The PLA also recruits minority soldiers and officers for service. Some of these are made the focus of emulation campaigns in the military.

"Inner Mongolia: The Haos and Huais of Chinese Policy Toward the Mongols"

Mongolian Studies, Vol III, pp 97-115

Originally prepared for the conference of the International Studies Association in 1976, this article deals with the pros and cons of Chinese Communist policy in Inner Mongolia as seen from the eyes of two Mongols, one who is supportive of these policies and one who is opposed.

"Counterinsurgency: The Thai Case"

American Defense Policy, 4th Ed., by John E. Endicott and Roy W. Stafford (Baltimore: Johns Hopkins University Press, 1977), pp 177-183

The article outlines the Thai insurgency and the Thai government's response utilizing variables explained by Bard O'Neill. The Thai government's utilization of the environment, organization, popular support, and external support are analyzed. The conclusion is that the Thai government has not done a very effective job in counter-insurgency, but the insurgents have not been able to fully capitalize on this.

"The People's Republic of China: A Survey of Geography, Transportation and Politics"

This study was prepared in cooperation with Captain Menza, Department of History, USAF Academy, Colorado and Cadet Dean Habrun for SAC/IN. The study explained China's geography and gave insights into current politics and economics. It was designed to serve as the basis for a targeting study by SAC.

Major Chris L. Jefferies

"Defense Decision-making in the Organizational Bureaucratic Context"

American Defense Policy, 4th Ed., (Baltimore: Johns Hopkins University Press, 1977), pp 227-239

"Public Administration and the Military"

Public Administration Review, July-August 1977, pp 321-333

The article addresses the problem of the lack of interaction between military administration and public administration by identifying the major causes of the lack of interchange, examples of the lack of interaction, and mutuality of the two fields. The article argues that there is a need for more interchange between the fields.

Lieutenant Colonel John D. Macartney

"Introduction to the Theory of Bureaucratic Decision-making"

ADP IV, August 1977, pp 204-206

Captain Harold W. Maynard

"In Case of Deluge: Where Nuclear Proliferation Meets Conventional Arms Sales"

Los Alamos Scientific Laboratories, Los Alamos, NM, 1977

This paper looks at the problem of nuclear proliferation in the Third World from the perspective of required ancillary systems. Conventional technology that relates to delivery, security, safety, targeting,

survivability, reliability, and command and control are discussed as they impact upon a nation's ability to "go nuclear." The fundamental conclusion is that we should accept the inevitability of nuclear proliferation and tailor our arms sales policy to take this into account.

"How Military Elite Role Perceptions in Southeast Asia Conflict with the Civil-Military Paradigm"

Southwest Conference on Asian Studies, E. Polome, Editor, 1977,
by the University of Texas.

This paper outlines the West's civil-military paradigm, with emphasis on its conceptual weaknesses. Then the views of Indonesian and Philippine military officers are presented with the aim of showing an alternate view of the military's "proper" role. Emphasis is placed on dichotomous roles, the security development role, and the contrasting perspective of different military institutions with regard to what constitutes legitimate military functions.

PRESENTATIONS

Lieutenant Colonel Curtis G. Cook

"Trends in Constitutional Development"

Seminar presentation for Rhodes Scholarship candidates, USAFA,
October 1977

"Legislative Liaison in DoD"

Seminar presentation for students in PS 495, USAFA, November 1977

Captain Charles L. Fox

"NATO-Warsaw Pact Balance"

Air War College, April 6, 1977

Captain George C. Gibson

"Technology, Innovation and Defense Policy," Chairman of Panel

18th Annual International Studies Association Convention, March 16, 1977

The panel examined: (1) the Defense Department research investment strategy and key mission requirements of the next decade, evaluating technological innovations which will have a major impact on future capabilities; (2) the impact on strategy of increased versatility and accuracy in battlefield nuclear weapons; and (3) arguments that the early stages of weapons development should evaluate weapons systems,

such as the missile and counterforce weapons, as to their impact on arms control.

"The Strategic Balance of Power Between the United States and the USSR"

Presentation to students from the Ecole Polytechnique, the Institut Supérieur de l'Administration, the Hautes Etudes Commerciales, and the Institut Universitaire Technologique (Presentation at Colorado College), July 27, 1977.

FSO-4 Roger G. Harrison

"The National Security Council System"

Given at Colorado College to International Relations Seminar, October 11 and December 6, 1977

Given to Mensa Society in Pueblo, September 17, 1977

Captain William R. Heaton, Jr.

"Analyzing Chinese Factions," presentation before the faculty of the Naval Postgraduate School, August 25, 1977

This presentation was made in Monterey, CA, while TDY to the faculty of the NPS. It outlined approaches to understanding factionalism in China's leadership and discussed some variables which must be considered in understanding decision-making in China.

"Understanding China"

Presentation before the ADC Air War College Seminar at Peterson AFB, Colorado, on October 4, 1977. The presentation dealt with contemporary economic, political and social aspects of the People's Republic of China.

Lieutenant James M. Keagle

"Panama Canal Treaties"

Presentation to students, East Junior High School, Colorado Springs, Colorado, September 1977

Lieutenant Colonel John D. Macartney

"Congressional Elections: Incumbency and Service to Constituents"

Conference on congressional elections of the National Elections Study Project of the Center for Political Studies of the University of Michigan. Held at Rochester University, October 1977

"Deterrence Strategy"

AWC Non-resident Seminar, USAFA, April 1977

"President Carter's Foreign Policy"

ACSC Non-resident Seminar, USAFA, October 1977

Captain Harold W. Maynard

"Military Roles in Southeast Asia"

Western Conference of the Association of Asian Studies, USAFA,
October 1977

"Evaluation of National Security Learning Packages"

National Conference of the International Studies Association, St.
Louis, Missouri, March 1977

Major Douglas J. Murray

"Future World Orders"

Air War College Seminar, NORAD/CHITLAW Building, May 1977

"The Central Mystery of Political Science and the Study of Canadian
Defense Policy--Is it Time for a New Approach?"

4th Biennial Conference of the Association of Canadian Studies in the
United States, Burlington, VT, October 7-8, 1977

Captain Roger I. Pinnell

"Hot Spots in Today's World"

3d Battalion, 24th Armor, Ft. Carson, Colorado, November 1977

Colonel Ervin J. Rokke

"NATO: Problems and Prospects"

Armed Forces Air Intelligence Training Center, Lowry AFB, CO, June 1977

"NATO Defense Planning"

Discussion Group on NATO Defense Strategy, Council on Foreign Relations,
New York, New York, December 1977

LCDR Theodore G. Stier

"POW Experiences"

3d Battalion, 24th Armor, Ft Carson, Colorado, December 1977

Naval ROTC Ball, University of Colorado, Boulder, Colorado, October 1977

BCT Executioner Squadron, USAFA, June 1977

Major John D. Szostak, Jr.

"Nuclear Energy - The Proponents View"

Presented to 19th Air Force Academy Assembly Delegates, February 1977

"Presidential Memorandum #10"

ACSC Seminar, September 1977

"President Carter's Foreign Policy"

Presented at Rhodes Scholarship Seminar Program, USAFA, October 1977

Captain John A. Wahlquist

"Ethical Considerations of Nuclear War"

Second Class Cadets - CWDS-13, USAFA, September 24, 1977

Third Class Cadets - CWDS-33, USAFA, October 1, 1977

"Association of Graduates Memorial Service"

Cadets of CWDS-33, USAFA, October 15, 1977

"The Other Wiseman"

Academy Ward, The Church of Jesus Christ of Latter-day Saints,
Colorado Springs, Colorado, December 17, 1977

DIRECTORATE OF ACADEMY LIBRARIES

PUBLICATIONS

Mr. Donald J. Barrett

"Appendix B: Science and Engineering Reference Books"

Reporting Technical Information, Kenneth Houp and Thomas Pearsall,
3d Ed., Glencoe Press, 1977

Miss Betsy Cox

"Terrorism"

Special Bibliography #57

Mr. Douglas Johnson

"Falconry"

Library Handout

"Searching the Literature"

Library Reference Guide #8

Miss Florence Klemm

Book Review of The Lionhearted by Harriet May Savitz

Colorado Libraries, June 1977, pp. 30

Book Review of Gardening for People (Who Think They Don't Know How),
by Douglas Moosn

Colorado Libraries, Sept 1977, pp. 45

Captain Pamela Sexton

"The Cadet Library"

Association of Graduates Magazine, Winter 1977